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ABSTRACT

A review of early childhood programs of the sixties is presented. This review is divided into the following sections: Converging Forces and Orthodoxies; Educational Programming; Review Criteria and Procedures; Program Review Structural Outline; Instructional Systems; Delivery Systems; Evaluation Systems; and Support Systems. The problems of educating the poor and minority groups was one factor influencing the start of early childhood programs. Two dominant influences on early childood educational programming through the sixties are the Emergence Tradition and the Behaviorist Tradition. The Emergence Tradition holds that the child unfolds according to a genetic blueprint, and the Behaviorist Position holds that what a child learns makes the man. The initial criteria for program inclusion in the review included: (1) that the program was developed and implemented for pre-primary age children between the ages of three and five; and (2) that the program had an educational component. The tentative outline for program review consisted of six categories and 26 items covering program foundations, instructional systems, delivery systems, installation and maintenance systems, and support systems. Recommendations for the program include: (1) That there be a master teacher assigned to each school unit; (2) That all professional personnel involved in program participate in orientation and evaluation; and (3) That further study be made concerning the length of the preschool program. (CK)

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National Program on Early Childhood Education

Early Childhood Education Program and Research Support Literature -- A State of the Art Review

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Introduction

The decade of the sixties was marked by extraordinary contrasts. Winschel (1971) has described them vividly in his critique of compensatory education.

> . . . Hunger in the midst of plenty, strife in the struggle for peace, riots in the citadels of learning, and poverty the plague of plenty. Youths in search of freedom imprisoned themselves with drugs, soldiers trained to kill refused to fight, and the recipients of public welfare refused to be everlastingly grateful. (p. 3)

These contrasts, the paradoxes and ferment they reflect were the context in which early childhood education was given a new impetus during the 1960's. The social, political, intellectual and economic forces which converged in the sixties to create a climate of interest and support for early childhood education were powerful. They led to ambitious undertakings on a crash basis that the field was poorly equipped to sustain. The cycle from unbridled optimism to disillusionment was quick and short-sighted. Expectations of instant success were rewarded with equivocal or meager results. When the unrealistic expectations were poorly rewarded, enthusiasms quickly waned. Now we enter a time of consolidation and reflection. What was the outcome of the decade's efforts in pre-primary education? What is to be learned from successful programs? Exceptions to the general run of early childhood programs emerged and are the focus of this review. Failures also contribute to our understanding and form the basis for constructive critique.

Early childhood programs of the sixties must be reviewed in the larger social context in which they were implemented. The successes, the problems and needs they highlight are a product of the setting of the times. To paraphrase Peter Goldman (1971):

> One of the keys to understanding is that if they were honest efforts, they were limited efforts as well. They were limited by the orthodoxies of the era. Now they are being called to account under new orthodoxies that their failures helped to produce. It may be that this is unfair.

Let that be the caveat of this review.

Converging Forces and Orthodoxies

Perhaps the most powerful force having a direct impact on early childhood education during the sixties was the civil rights movement. The schools were the arena in which some of the most significant civil rights battles were fought. That schools should be the battleground, the arena or a social tool is not surprising since schooling in general, and public schooling specifically, has historically played such a role. The New England Puritans used the instrument of schooling to inculcate the young with the moral percepts necessary to sustain their social organization. The plantation settlers aspired to schooling which emulated the classical education of the landed gentry of England. Schooling was a tool to insure a gentile social class. Later, the founding fathers aspired to establishing a system of schooling which, while free of narrow and competing religious sectarian influences, would be unrelenting in its efforts to create a republican political homogeneity among the people. Such homogeneity was believed necessary for the very survival of the new nation. In the 1830's when immigration from the non-English speaking countries of middle-Europe was at its peak, the fear of social and cultural diversity was so great that the fires of homogenization were kindled anew. Educators such as McGuffy, Drake and Stowe were to go on record that the schools must assimilate and transform this foreign avalanche within one generation into a homogeneous Anglo-American society. Schooling and the educational system has a long history of being the tool of choice for moral, political and social homogenization. This is one of the basic orthodoxies of American public education and one that was to be followed again during the sixties on a massive scale with early childhood education.

Six years after the monumental decision of the Supreme Court in Brown vs. Topeka which eradicated the separate but equal doctrine supporting racial segregation, the nation was recognizing the bitter fruit of this racist concept. The desparity in school achievement between segregated groups had become clear. A pattern of progressive retardation emerged for those who had been the principle victims of the doctrine. Similar patterns were observed among children whose segregation was _de facto_ rather than _de jure_. Other correlates of this progressive retardation were identified: economic poverty, lower social status, unskilled and unemployed parental occupational status, minority group membership, ethnicity, central urban or rural isolated residency--all showed strong relationship to poor school achievement. Rather than the foreign hordes from outside which threatened the social mainstream, middle-class America discovered within its midst conditions which threatened its social existence.

As Wilkerson (1971) points out, the desparities in school achievement were soon attributed to inadequacies in the socialization process prior to regular school attendance as well as segregated practices within the schools. Early cultural deprivation and social disadvantage were accepted as root causes and a new orthodoxy was born. This orthodoxy had a profound effect on early childhood education programming. It called to question the appropriateness of traditional middle-class programs. It focused attention on deficiencies in the child, led to compensatory strategies and seemingly devaluated cultural differences. While the banner was raised for human rights, equal opportunity and compensatory education, the covert aim was a social and cultural homogenization to diminish the threat from within.

Woven into the fabric of the nation's emerging social conscience during the sixties was the economic progress of the country. Following World War II and during the Korean conflict, the nation entered a period of rapid economic growth. The technocracy which had served the nation so well in time of war, when put to peaceful use, produced a level of affluence previously unimagined. Built on technical skills, requiring evermore skill and displacing the unskilled with its products and inventions, affluence was enjoyed by the majority rather than being the birthright of a privileged minority. The contrast, "poverty the plague of plenty," was a guilt-edged economic problem. Providing the intellectual and technical skills for the unskilled and semi-skilled was an educational problem, but one the existing system was ill-equipped to handle. The nation's educational system's methods and procedures were a product of tradition which called for

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changing children to fit society. Perhaps it was impermeable to change and adaptation to the demands of internal social and cultural diversity. In many ways it would be much more economical to invest in schooling at an early age than to attempt and expect the ponderous public educational system to accommodate such diversity. Early childhood education had promise of preparing potential citizen failures to cope with the demands of the system as it existed. So the task of early childhood education was to prepare those outside of the mainstream to cope with the demands of a complex and rigid educational institution. Another orthodoxy of the time.

After a decade in which politics had been concerned with healing the ravages of war abroad, meeting the challenges of the cold war and basking in a domestic *laissez faire* paternalism, the sixties opened to a new political call, "Ask not what your country can do for you· ask what you can do for your country." The young and the young-at-heart responded. Registration of voters, civil rights marches, service in the Peace Corps, volunteers in programs for pre-school children--all enlisted sympathy and the dedication of citizens in an appeal to social conscience beginning early in the sixties. In spite of the loss of young charismic leaders to senseless madness, faith and hope were sustained. Politics appeared to enter a new period of enlightenment where it lived to the euphemism, "the art of the possible." Decades of neglect, acquiescence and pious tolerance led to a period of justified impatience and activism. Impatience and activism demanded instant change and instant success. The demand for instant success was felt most keenly in early childhood education. Expectations of instant success pervaded the field in spite of cautions from leaders in the field. Caldwell (1971), among others, repeatedly warned of the over-sell, over-kill direction in which early childhood education was going. The faith that anything was better than nothing at all for young children, that good intentions would make up for our lack of knowledge, that instant success would be the reward of action, undergirded another orthodoxy of the time.

The intellectual community was not untouched by the civil and social ferment. Deeply stunned by the accusations of failure in the competitive space race with Russia after the loftingof Sputnik, a surge of effort and interest in mathematics education and science education surfaced. The goal was to court more recruits into these fields by curriculum reform based upon restructuring knowledge and content. Throughout the burgeoning new technological fields--nuclear power, computer development, sophisticated new communications and weapon systems--increasingly heavy demands were made for highly developed intellectual skills. External competition and internal demands for more skills increased pressure on the intellectual community.

All segments of the population held untapped sources of potential intellectual ability. The schools were expected to develop this potential. Support for the concept of developing intellectual skills came from American psychology.

Academic and educational psychology had long retained a strong environmentalist flavor from Dewey through Watson to E. L. Thorndike. The behaviorist traditions of American psychology were given new impetus by the work of B. F. Skinner and his colleagues. The emphasis on an environmentalist position remained well established.

On the other hand, developmental and clinical psychology had put emphasis on growth and abnormality retaining much of the influence of Freud and the neo-Freudians. Developmental and clinical psychology carried a strong hereditary bias. The nature-nurture controversy, particularly in regard to intelligence, was a persistent theme. Heated academic debate concerning the development of intelligence had been going on since the turn of the century. Nature and nurture each had its stable of vigorous proponents.

By the time the decade of the sixties began, Hunt (1961) was able to synthesize existing empirical data and establish an interactionist position which became the cornerstone for early childhood intervention of the sixties. Hunt's work is probably cited more often as an empirical basis for early childhood educational programming than any other single work.

The early work of Skeels and his co-workers (1939, 1966), Kirk and his colleagues (1958, 1964) in mental retardation became models of intervention which would have great influence upon the field. (An extensive review is included in Appendix A.) The strong empirical influence brought accolades from the intellectual community. However, reliance upon normative instruments and procedures and inadequate or inappropriate research design would lead to equivocal and inconsistent results. The empiricists' influence strengthened over the decade and despite its internal weaknesses for dealing with the problems at hand emerged as an orthodoxy of the time.

Educational Programming

Early childhood education programs came to the sixties with a tradition of serving primarily the middle and upper classes. In these classes, smaller family units in the urban and industrial centers divorced from the influence of extended family patterns of socialization privately subscribed pre-primary nursery schools. Such schools provided an opportunity for peer socialization and individual emotional development.

Two dominant influences on early childhood educational programming through the decade of the sixties can be identified. Contrasts run the risk of over-statement and polarization. This is not the intent, rather it is a desire to present the grounds which appear to have been the basis for honest differences and conflict concerning early childhood education programming.

The Emergence Tradition has strong roots in hereditary developmental concepts. From a program viewpoint, these roots can be traced conceptually back to Froebel. Warm, affectionate adult relationships in the context of peer social interaction provide for the development of ego strength. The benign environment permits the child to develop socially and emotionally without the burden of neurotic defenses or destructive inhibitions.

Within this tradition, the concept of the child is that of an individual unfolding according to a genetic blueprint laid down at the time of conception.

Educational programming emphasizes cooperative social skills, individual emotional development and creative expression through exposure to art media. The environment must be rich with materials and objects which can be freely selected for self expression. Peer interaction is encouraged through supervised small group play activities, ritualized as "play, the work of the child."

The role of a significant adult in an educational setting is essentially passive, waiting for the "teachable moment." This adult provides affectionate relationships neither pressing the child to learn nor blocking his natural curiosity and exploratory urges. He sets the environmental stage for enriched experiences which are child initiated in keeping with his emerging needs.

The Behaviorist Position: Strong roots for this position are found in American behaviorist psychology, particularly Watson, Thorndike, and later, B. F. Skinner. The behaviorists hold that the responsibility for teaching the child to cope effectively with his environment is an adult one. Skills, abilities and one's motivations are learned. What is learned makes the man and what is learned is taught.

The behaviorists' concept of the child is one of an individual shaped by environmental history and circumstances. While heredity plays a major part in physical growth, the child's cognitive, intellectual and social skills are essentially a product of learning as are their motivations. Formal educational programming rests upon experiences and activities organized to develop the skills and abilities the child lacks. Deficits identified through comparison of disparate groups form the entry point in program planning. Since schooling's purpose is to prepare the child to deal with his world with increasing confidence, cognitive and intellectual development is strongly emphasized.

The significant adult role is one of active engagement. He provides experiences, structured sequentially, so that the child meets with continued success as tasks become more complex and demanding.

At mid-decade, Congress passed the Elementary and Secondary Education Act and the Equal Economic Opportunity Act which gave early childhood education its largest single public underwriting since the Landrum Act of World War II. Congress's action was in response to social, political, economic and intellectual forces which in turn shaped the direction of early childhood education. These external and internal forces and their attendant orthodoxies contributed to program development while others inhibited and weakened sound programming. Sarason's study (1971) of the problems of change in schools and schooling underscores the fruitlessness of explanation independent of understanding the context or setting in which change occurs. In many ways it appeared more economical to invest in schooling at an early age than to attempt and expect the ponderous public educational system to accommodate social, cultural and intellectual diversity. The task of early childhood education was to prepare those outside of the mainstream to cope with the demands of a complex and rigid social institution--another orthodoxy of the time.

Review Criteria and Procedures

The initial criteria for program inclusion in the review were (1) that the program was developed and implemented for pre-primary age children between the ages of three and five: (2) that the program had an educational component: (3) that the formal literature contained adequate descriptive material on the educational program which would support replication: (4) that the program be considered "successful" by the investigator or developer reporting it; (5) that "success" be objectively demonstrated in the formal reports; (6) that the program was implemented in the decade of the sixties.

The initial procedure adopted for the review included an exhaustive search of the formal literature covering the decade. On the basis of a review completed in 1968 (Appendix A), it was believed there would be a rich mine of program descriptions and material reflecting the surge of interest and activity over the latter half of the decade. Unfortunately, this was not the case. With some notable exceptions, material describing educational programs does not exist in the formal literature. Two factors and perhaps a third contribute to this state of affairs. The first is time. Typically, educational programs are service oriented and not readily amenable to the demands of rigorous evaluation. If less than one half of one per cent of the total educational dollar goes into research and development it is probably inappropriate to expect many programs to attain even the minimum criteria suggested above. More importantly, programs designed to be implemented and evaluated typically reflect a schedule such as the following: a year in planning stages, two to three years in implementation (allowing children entering at three years of age to move through the program and to formal school entry); and finally, a year in data analysis and report writing. On top of this sequence, one must allow for publication lag which has been notoriously long. Interim reports and occasional progress reports give scant space to program description. It would appear that 1972 or 1973 would be the earliest time that we might expect adequate coverage of programs implemented during the latter half of the sixties.

The second major problem involves the requirements of reporting. Existing monitored journals in most instances are inappropriate for program description. Space, format, criteria and content do not easily adapt to the usual research reporting mode. Katz noted this problem in her 1969 annual report of the Eric Clearinghouse on Early Childhood Education where she makes a case for development of a special journal or monograph series. Diminishing appropriations apparently militated against providing support for this new venture by the Clearinghouse:

unfortunately, a short sighted decision in view of continuing interest on the part of federal and state agencies in early childhood education and day care program legislation.

A third possible factor which may contribute to the dearth of material readily available in the formal literature may be the problem of copyright. Personally, I have witnessed original ideas for instructional materials lifted in their entirety and commercially produced and distributed before the originator had verified the effectiveness or efficiency of the material in question. While it is true that many of the experimental materials were developed with public support and rightfully belong in the public domain, the originator has just claim to recognition of intellectual property and the inherent responsibility to guard the public from pre-mature application, irresponsible educational gimmickry and over-enthusiastic claims. These concerns are not presently understood nor have measures been taken to alleviate them. Developers should be urged to move with all deliberate speed to make their products and programs available but that speed must be tempered with adequate safeguards for the public and the developer.

The remaining source of program material was the highly illusive fugitive collections, the most stable represented by the ERIC Documents. The entire Clearinghouse collection, those placed in the system for microfilming and those screened out by established Clearinghouse criteria were reviewed for this paper.

Individual developers and researchers were also solicited by mail for available program descriptions. Response to this solicitation was most discouraging. Unless an investigator had already completed initial studies two to three years previously, material was unavailable. While disappointing, such a state is not surprising given the time factors discussed above.

It should be noted that the fugitive literature contained a great amount of material which met the first two criteria. Most of the Head Start literature fell in this category. One is hardput to find programs that meet the remaining four criteria, even disregarding the term "formal literature" in the third criteria.

Recommendations

1. Develop pre-publication dissemination system of standardized program descriptions which protect the developer and public from pre-mature use.
2. Schedule periodic reviews based upon pre-publication material.
3. Develop standardized format for reporting program descriptions annually.
4. Concentrate on the use of ERIC capabilities to make the above available to the research and development community.
5. Develop a monograph series under ERIC auspices for speedy dissemination of program materials.
6. Develop appropriate incentive systems for timely dissemination and upgrading of descriptive material.

Program Review Structural Outline

The tentative outline for program review consisted of six categories and twenty-six items. It was developed primarily on the principle investigator's experience and the written inquiries which had been directed to the offices of the National Laboratory on Early Childhood Education. In most instances, these inquiries had come from people in decision making positions desiring assistance in beginning their own programs. Some came from investigators working on projects of their own and needing specific material for their purposes. The outline reflects these diverse inquiries and *a priori* assumptions of the kinds of data needed for program evaluation by the principle investigator. There is a basic assumption that the programs are basically educational rather than custodial. Ideally, each section of the outline if appropriately covered would be able to stand on its own as an independent guide for a potential program implementer.

Program Foundations

In this section one would expect to find the basic material of description. It would outline in some detail the theory and rationale of the program including description of the target population.

(a) Prescriptive and assumptive conditions - to include the limitations, time, number, population characteristics, instructional boundaries, staffing restrictions, and so forth which are assumed to restrict or delimit the program's generalizability.

(b) data-oriented rationale - to include the empirical basis for the key program elements. Specific findings carefully reviewed and brought together to establish a sound rationale.

(c) Developmental theory - to include the major child developmental position from a theoretical viewpoint which was the guidance framework for program development.

(d) Instructional theory - to include assumptions concerning the structure of knowledge, experience and role of the significant others in the teaching-learning situation, may have learning theory components.

Instructional Systems

This section specifies the details of the instructional program. It should include the sequence of instruction, the scope of the curriculum, and the means of assessing individual performance.

(a) Performance objectives - to include specific objectives stated in behavioral terms, at least in terms amenable to measurement.

(b) Instructional organization - to include the sequence of instructional units or experiences, the rationale for their order and the domains to be covered. Schedules may provide an overview. Where the program is emergent, the anticipated sequence of events should be evident.

(c) Instructional content - to include the substance of instruction e.g., if the goal is development of academic skills, the content might be the traditional subject matter areas of the school.

(d) Instructional methods and techniques - to include strategies such as reinforcement application, "discovery" approaches, special autotelic devices, etc.

(e) Instructional materials - to include devices and materials designed as vehicles by which instruction is carried or augmented. May include special bibliographies, unique uses of school materials, specially designed materials.

(f) Assessment - to include specific methods, procedures and instruments to assess individual performance and progress. Should be directly related to performance objectives. May or may not be a part of the program evaluation strategy.

Delivery Systems

This section deals with the means for delivery of instructional services. It is concerned with the way in which the program specifies the immediate environmental conditions necessary for learning. Of particular concern is the teacher or the teaching devices to be used. Training and maintenance procedures should be specified.

(a) Performance objectives - to include the expected terminal behaviors expected of the children. Program evaluations should be tied in part with assessment of competencies obtained by participants.

(b) Research and technical support data - to include sub-studies and conclusion oriented efforts which support the efficacy of the program. Of particular concern should be cost data for start up and continuation.

(c) Evaluation instruments and procedures - to include rationale for instrument choice. Technical data on non-standard instruments developed by investigators or its sources should be indicated. Special competencies needed for testing, etc., should be noted. Specialized procedures and techniques followed should be detailed.

(d) Support system evaluation procedures - where family or community involvement is an integral part of the program, procedures for involvement and assessment should be noted. Cost estimates, time and resource allocations are appropriate concerns.

Installation and Maintenance Systems

This section would be of particular concern to the administrator-decision maker. Considerations of program initiation, information and management strategies and materials, advisory services and methods of renewal are essential to the user.

(a) Entry strategies - to include those pre-implementation conditions which should be developed to insure acceptance and support. (See also pre-service procedures and materials)

(b) Organizing information and management strategies - to include internal and external communication considerations. Planning procedures including feedback mechanisms for effective monitoring.

(c) Information and management materials - newsletters, press and media coverage, internal periodic reports, their content and use should be covered.

(d) Up-date strategies - to include the information needed, procedures for collection and recovery, means of input and lines of responsibility.

(e) Advisory services - to include availability of developers, advisory services or alternate strategies which the implementer might consider for assistance.

Support Systems

This section covers the means of obtaining and organizing effective support for the program.

(a) Community - informed citizen assistance including volunteer help.

(b) Parental - strengthening the home program partnership including information sharing and program participation.

(c) Support materials - specialized public relations materials development and dissemination.

(d) Formal organizations - legislative and official administrative bodies and agencies, service clubs and organizations to augment program impact.

This outline is far more ambitious than the present state of the art. It represents more of an ideal than an expectation. The first four categories represent minimum descriptive detail for a major program. Several of the older efforts approach this level of detail. The last two categories are rarely entered, perhaps because they are considered dissemination functions.

Recommendations

1. Funding agencies would do well to adopt some appropriate set of guidelines for program descriptions with an eye to the needs of the implementer as well as the research and development community.
2. Such guidelines and format should reflect the input of publishers, disseminators and potential users as well as the research and development people.

Discussion

Nineteen programs were finally identified where enough material was available to make definitive statements concerning the educational program or which highlighted a particular aspect of the state of the art which the investigator felt should be pointed out. The reader is directed to the summaries (Appendix B), (Appendix A), and the original sources noted with the summaries for greater detail. The six major categories of the review summary and format will serve as points of departure for the discussion.

Program Foundations

With one exception, all of the programs reviewed were targeted for disadvantaged pre-primary children. The populations served ranged from Black, Mexican-American, Puerto-Rican to white Appalachian residents In terms of time, all of the programs used only a portion of the day, twenty or thirty minutes, to approximately three hours. However, the length of the intervention period varied from two summer months to two or three years. While such disparate time elements make meaningful comparisons impossible, it is fair to say that the longer the period of intervention, the more likely there would be significant gains and that those gains would be more resilient to the washing out effect so often observed.

A second point of commonality is the emphasis upon developing increased functional intellectual skills, particularly, language and verbal abilities. A third general observation is the emphasis upon the child's deficit in a number of areas of aptitude as well as attitude. Such a posture mediates for a compensatory educational strategy. Developing that strategy is the point of departure which makes implementation and results obtained quite different from program to program.

Theory from a developmental standpoint and also from an instructional view provides an interesting contrast. Moore and Anderson have developed a relatively sophisticated developmental theory with direct correlates to an instructional theory. The developmental theory rests heavily upon the work of George Herbert Meade and George Simmel. They see development as an interacting process between significant others and the physical environment. Social folk models are developed within a society to instruct the young concerning his relationships with nature, random elements in experience, his interactional relations with others similar to himself and the normative aspects of group living. These folk models include puzzles, games of chance, games of strategy and aesthetic entities. Active engagement with these folk models provides many perspectives for understanding what is being learned, has purpose, and the activities are useful unto themselves. Folk models provide the basis for socialization of the individual. Moore and Anderson suggest that they are universals applicable to all children whatever their circumstances might be. It is essential that the adult society arrange encounter with the folk models which is the essence of instruction.

Nimnicht, Meier and McAfee using the theoretical constructs of Moore and Anderson implement them in an intervention program. However, they do emphasize language development for their bilingual population.

Sprigle articulates a stage concept of development similar to those of Bruner and Piaget. He believes that the products of learning are relatively unimportant since they may change several times within a generation. It is more important to emphasize the process of learning or "learning to learn" which has greater long-term utility. His is a stage theory of development. Movement from stage to stage is enhanced by developing competencies in learning to learn. Instructional strategies and curriculum are deduced from the demands of the stages and close attention is placed upon sequencing experience to develop the process of learning.

Weikart and the Ypsilanti group borrow from Piaget in their developmental concepts using them as a framework for curriculum development. In a somewhat remarkable mixture, Skinnerian reinforcement strategies are used as techniques for child management.

The preceding programs have the strongest theoretical orientation, using developmental theory as a stepping stone to instructional theory and curriculum development.

A more centrist or eclectic position is taken by the next group of investigators. Karnes and her co-workers take a strong deficit position with an emphasis upon language development for their black disadvantaged subjects. Linguistic theory from Osgood, Kirk and McCarthy provides the basis for curriculum development. However, this emphasis in program is not gained from a more generalized developmental theory. Comparative research in mental retardation and functional retardation forms the basic rationale for the program.

Klaus, Gray and their colleagues support a cognitive deficit hypothesis in the child's acquisition of aptitudes for achievement. However, they believe that aptitudes must be supported by positive attitudes toward achievement and draw heavily on McClellan's motivation theory in this regard. Comparative research provides the basis for selection of aptitudes for achievement and attitudes toward achievement to be included in this program. They, too, rely on reinforcement theory for management in the teaching-learning context.

Hodges, Spicker and McCandless appear much more eclectic than the group above, placing heavy emphasis on comparative research which demonstrates deficits among their program population. With this as a beginning point, they follow a strategy of individual diagnostic and prescriptive instruction in the problem areas. In general, language is the focal point of diagnosis. Additionally, perceptual motor development is emphasized.

In contrast to the centrist and eclectic position of the above investigators, Blank and Solomon take a very strong stand concerning the importance of diagnosis of key deficits in the deprived child.

The key problem to these investigators is the failure to develop an abstract attitude and a symbolic system on the part of the child to facilitate organizing his environment. They take exception to the strategies used in other programs. Their goal is to develop abstract thinking and an internal symbolic system through language acquisition. They believe this can be done most efficiently in a one to one situation using Socratic methods.

Perhaps the investigators most adamant in their atheoretical position are Bereiter and Englemann. They have no use for developmental theory, particularly cognitive theory, believing there is little utility from an educational point of view in such conceptualizations. Failures in school achievement are seen as failures in instruction, not deficits in children. They believe developing a technology of education which will teach behaviors which have educational significance for the individual is a more appropriate goal. This direct attack on the problem mediates for teaching the content of the school curriculum so that disadvantaged children can succeed. Their atheoretical position borrows heavily upon reinforcement theory's atheoretical theorist, Skinner.

The role of the teacher or significant adult becomes increasingly more active as we move from Moore and Anderson's position to Bereiter and Englemann's. By active, we mean more direct and intensive interaction with the child. One would expect that the necessity of prescribing the behaviors of the adult would increase in the same direction while specification of specific instructional material and the arrangement of the environment could decrease.

The remaining programs reviewed have far less specificity concerning the program rationale and/or theoretical position. In the main, they are service oriented and follow the generalized framework underlying Head Start Programs. These generalized guidelines seem so open to individual variation that one must assume that individual investigators were not inhibited from implementing their own programs within that rubric. The rigor of the rationale and/or theory underlying program implementation, however, seems directly related to demonstrable results.

Recommendations

1. Strong emphasis should be placed upon development of program rationale. This provides a basis for consistent conceptualization and program design and is of heuristic value to the implementer in projecting beyond the boundaries of the program.
2. Since results of an educationally significant nature appear positively associated with careful formulations at this level, program reports should include adequate coverage.
3. No specific recommendation can be made concerning the formulation of choice. I would question whether such a decision could or should be made. The overwhelming acceptance of cultural, social or individual deficit can

be detrimental to the recognition of cultural, social and individual pluralism. The latter implies strength in heterogeneity rather than homogeneity. It appears to this investigator that this is a value issue which must be squarely faced rather than covertly settled by default.

Instructional Systems

Marked contrasts appear among programs on points of emphasis, instructional organization and techniques rather than instructional content. Language is an appropriate example. Bereiter and Englemann stress the functional utility of language as a medium of communication between teacher and child which carries the concepts the child should master. Instruction begins with imitation of identity statements followed by use of polar opposites, prepositions and if-then deductions. They see language as a formal academic content area to be taught setting aside specific time for such instruction. Formal instruction in small groups of four to five was carried on in a special language room. Premium is placed upon imitation and correct responses. The pace is fast, intense, no nonsense, but fun and rewarding.

Blank and Solomon seem to agree with Bereiter and Englemann that language is a vehicle for conceptual development, but more importantly the key to abstract thinking. It is the essential process for development of an internal symbolic system. To them, the learning day is a language day. The teaching-learning dyad is in constant verbal interaction with the teacher structuring the interchange to demonstrate the processes used in acquiring the key concepts of the symbolic system.

Language forms the core of the Hodges, Spicker and McCandless program as a precursor to reading. Formal oral language is taught with ancillary language activities to reinforce skills and provide opportunities for generalization and transfer. The formal language lessons were developed on the basis of diagnosed deficits. Expressive language was the focal point emphasizing response elaboration, verbal definitions and verbal feedback. As the curriculum developed, greater continuity between lessons was attained and better integration was achieved with other activities in the program. Formal instruction occurred in small groups of approximately eight.

The Ypsilanti group began their work with heavy emphasis on an enriched language environment. Employing Weikart's technique of "verbal bombardments" the teacher kept up a steady stream of comments and questions of increasing complexity. As the curriculum developed, language enrichment was replaced in emphasis by a more targeted functional concept in keeping with Piagetian theory. Essentially, language skills were embedded in activities designed to develop temporal relations, spatial relations, seriation and classification. Developmentally, language moved through levels of symbolization from the abstract to the concrete with heavy emphasis placed upon the verbal level of operations.

Sprigle and his associates are very similar in their language emphasis to the Ypsilanti group s later position. They too used small group instruction in their cognitively oriented "learning to learn" program.

Gray, Klaus and their colleagues place heavy emphasis upon development of language skill. Language is formally taught as well as embedded in the cognitive skill portion of their program. High premium is placed upon elaboration and an enriched verbal environment. Formal instruction occurs in small groups associated with the experience unit organization which forms the basis for instructional organization.

Karnes and her associates place central emphasis on language development. The techniques employed seem to be similar to those used by Bereiter and Englemann; however, the scope and sequence is far more elaborate using Osgood, Kirk and McCarthy's psycholinguistic theories and diagnostic approaches. Supplemental materials are introduced to elaborate language skills. Formal instruction is presented in a language room in a small group situation.

Moore and Anderson emphasize the development of complex communication skills as do Nimnicht, Meier and McAfee. However, they depart radically from the previous investigators in their method of obtaining communication skills. The burden is upon the child to discover and develop these skills. He is assisted with his discovery and development by the carefully arranged autotelic environment. The principle mechanism is the "talking typewriter." A carefully engineered machine available to the student on demand provides the opportunity to discover letters, their combination for words, seriation to sentences and finally written stories. Again, in oral language it is the child's initiative that brings about communication. The "teacher" is enjoined from initiation of verbal interchange. Outside the autotelic environment and on his way to the outside world, the child practices what he has learned in the autotelic environment in a "transfer room."

In most of the remaining programs, language was reportedly emphasized but the descriptive materials suggest a rather diffuse and general approach.

In all of the programs reviewed, traditional nursery and kindergarten program content can be found. However, the purpose and use of traditional content and activities is supportive of the major emphasis. It is abundantly evident that development of intellectual skills, academic ability or cognitive competence is the central theme. Materials are similar but used in program specific applications. Relatively low pupil to teacher ratios appear to be preferred.

Most of the other contrasts, as originally stated, appear to be ones of emphasis, instructional organization and technique rather than instructional content, scope or materials.

Gray and Klaus underscore the importance of teaching the sustaining motivation for achievement which will insure continued development of aptitudes. While this is an implicit concern perhaps of most of the investigators, it is not evident in their programs.

Hodges, Spicker and McCandless place emphasis upon the development of group social competencies and psychomotor abilities. They believe these are necessary to cope effectively with the traditional formal school.

Weikart has been moved to conclude from his study of three instructional systems that the operational conditions are far more potent in influencing results than the particular curriculum implemented. He believes the curriculum is an organizing principle for the teacher and not a content vehicle for the child. It should permit structuring the teacher's behavior to mediate effectively between theory and the behavior of the child.

Recommendations

1. Greater allocation of basic research funds should be made to study the functional inter-relations of processes, the sequence of development and factors influencing the rate of development.
2. The "Light House" programs should be supported for replication with different samples of children by the developers to ascertain effects upon differing levels of competency.
3. The program developers should be encouraged to make available details of their instructional system. Support should be made available for this exacting and time consuming work.

Delivery Systems

Physical facilities in most of the programs reviewd consist of a large group room and one or more small instructional cubicles or rooms for individuals, small group or isolated instruction and learning. The homeroom was used primarily for self-selected activities, free play, and ancillary instructional activities. This appears to reflect the need to diminish distracting external stimulation, provide better management opportunities and focus the child's attention on the specialness of the formal instruction period.

Most programs followed a definite schedule of events, flexibly administered in most cases, daily covering approximately three hours of the child's morning. The most outstanding characteristic of the delivery system in the major programs was the heavy emphasis upon in-service planning and evaluation procedures. Wikart is adamant concerning the importance of these activities if the program is to be successful. Continuous training not only provides substantive input but sets the stage for development of *espirit de corps*.

Recommendations

1. More research should be undertaken to specify the behaviors necessary on the part of the teacher or significant adult in the instructional program.
2. Continuous in-service work is a crucial variable in most of the programs reviewed. Released time and more personalized small group in-service programming should be encouraged.

Evaluation Systems

By far the most often used criterion measure to assess early childhood education effects have been the Stanford Binet and the Peabody Picture Vocabulary Test. The venerable Binet probably has been selected because of its status as the recognized standard measure of intelligence. As a predictor it does a commendable job of sampling learned behavior and estimating future success on content-similar learning performance as do most intelligence tests. Jensen (1971) makes the case well when he says. . .

> . . .my contention is that our definitions of intelligence and our methods of measuring it have been significantly shaped by the schools and the historical and geographical factors in their development. Intelligence tests, as we all know, were originally made to be able to rank-order children in terms of their probable success in profiting from the traditional curriculum under the traditional methods of school instruction. They were not intended to measure the typical outcomes of such instruction, but to assess, by means relatively independent of scholastic performance, the probable scholastic attainments of children given more or less the same standard instruction in school. (p. 58)

While the Binet's usefulness as a predictor of academic success has been well documented over the years, it's utility as a criterion measure is open to question on several substantive grounds. Haywood (1970) has pointed out to the inappropriateness of choosing a predictor measure to serve as a criterion measure. He argues, "The proper criterion for evaluating the effects of an educational intervention on learning is school achievement; or, if you are trying to teach something else, it is whatever you are trying to teach. It's not a score on another predictor." (p. 89)

Technically, repeated measurement with the predictor test over time provides reliability estimates for the instruments and only the most tenuous validity information concerning an intervening treatment. In effect, the experimenter is placed in a position of inferring that a treatment has been successful if the repeated measures show low test-retest reliability for the instrument or intervention failure if the test-retest reliability for the instrument is high. Often an instrument is chosen in part on the basis of its demonstrated high test-retest reliability. When treatment success is inferred on the basis of low test-retest reliability, the experimental logic is weakened by the rationalization of findings on fallacious or inconsistent assumptions and inferences.

It is true that some of the programs reviewed did use achievement tests as part of their evaluation battery. Bereiter and Englemann place great weight on their achievement scores obtained on a somewhat inferior test. Another great favorite is the Metropolitan Reading Readiness Test. In the main, however, predictor tests have the center of the stage in the sometimes awesome array of instruments periodically facing the child. Unfortunately, investigators are sore put to find adequate instruments at the pre-primary age level. While criterion referenced measures are implied in some of the projects none are specifically reported. Yet these measures are most important in formative evaluation during implementation phases.

One gets the impression that most of these investigators think in terms of summative evaluation, traditional pre-post experimental designs and normative measurement bearing the evaluative need. Such strategies appear much more in keeping with the type of research

Cronbach and Suppes (1969) refer to as conclusion oriented research. It is this reviewers opinion that the programs of research and development exemplified here are essentially decision oriented, and, therefore, call for rather different evaluation strategies. Research design in most instances, except the major projects, leaves something to be desired.

Recommendations

1. Major evaluation problems are to be anticipated in field research. Judicious use of consultants early in the planning stages should be mandatory if the investigator is relatively unsophisticated in research design and program evaluation.
2. Appropriate instrumentation for pre-primary ages should be a priority in basic research.
3. A calculus of change is urgently needed which can provide for reliable analysis.
4. Attention should be drawn to the necessity of a formative and summative evaluation component in decision oriented research.
5. Greater stress should be placed on criterion reference measures by funding agencies and their consultants.

Installation and Maintenance Systems

No material reported.

Support Systems

An integral part of the programs of Gray and her colleagues, Karnes and her associates, the Ypsilanti programs, the Belle Haven Preschool Project and the Appalachian Preschool Program is a systematic development of a parental program to provide support to the more formalized classroom activities. Gray's colleagues have made an extensive intervention study involving various combinations of contact and formal instructional programming for parents, particularly mothers. The results of those studies clearly indicate the significant contribution that parental support makes in the cognitive development of younger siblings in the family.

Building on these results the Appalachian Educational Laboratory has designed a program and support system including home visitors, televised programs and mobile classrooms to reach isolated rural Appalachia. While the program is too new for appropriate assessment of its effects it appears to be a promising innovation for a very specialized set of circumstances.

As we move into new early childhood educational programming in the decade of the 1970's the pioneer in work of the 1960's should be a guide. We suffer in the field from a critical dissemination lag. Practice often runs far in advance of knowledge and reliable information. We are an impatient people too often placing our need to act before our need to know. Certainly few of our service oriented programs displayed the thoroughness and commitment of the major programs in these reviews. They show the way to quality pre-primary educational programming, if we can avoid some of the orthodoxies which diminished our efforts in the decade of the 1960's.

APPENDIX A

Pre-Primary Educational Intervention
A Review

1900-1968

Introduction

In 1966, following an extensive survey of existing compensatory educational programs and projects operating throughout the United States for the disadvantaged, Gordon and Wilkerson wrote:

"If the success of our efforts at facilitating the educational development of disadvantaged youngsters could be evaluated simply on the basis of enthusiasm and activity generated by these efforts, we would (be declared) successful." (Gordon and Wilkerson, 1966, page 156)

One cannot help but be amazed at the mammoth wrenching of the collective political and social conscience of the United States which led in the mid sixties to the wholesale institution of intervention programs for children and youth from disadvantaged circumstances. In 1964, the Economic Opportunity Act provided funds for a variety of programs aimed at enhancing the social, intellectual and economic competencies of the disadvantaged. This act supported the largest single program ever mounted for young preschool children, Project Head Start. The Elementary and Secondary Education Act of 1965 provided enabling legislation to increase intervention programs for young preschool children.

In 1968, whether efforts supported by this legislation have had an ameliorating effect upon culturally deprived children is difficult to assess. Perhaps it is yet too soon. Enthusiasm still runs high, while crash activity seems to follow the form of response generalization curves, up and down the chronological age scale in both directions from a four to five year age mid-point.

This paper will deal primarily with that mid-point, since the bulk of the intervention efforts in cultural deprivation have centered upon the target age of three to five. That this is the case, underscores the fact that traditional school intervention has failed to bring children from disadvantaged environments into the main stream of the dominant society's culture. It also implies an inability of the traditional educational system to be flexible enough to change its methods, organization and attitudes to be successful with the disadvantaged population.

Conant (1961) saw these conditions as being so serious that he forecasted explosions from such "social dynamite". Our recurring long, hot summers are frightening validation of his predictions. Optimistically, the twenty year lag between production of knowledge and its application is a sentence which will be served.

The Grip of Controversy

Cultural deprivation is a complex of adverse environmental circumstances which bears directly upon the development of adequate intellectual and social functioning. It is a relatively new term in the psychological and educational literature. In 1966, disadvantaged was subsumed under the index entry Childhood/Preschool in the annual index to Psychological Abstracts. By 1967, the literature had expanded to the point where the entry merited its own indexing, Childhood/Disadvantaged. However, the concept has a much longer geneaology than this sudden maturity into the psychological lexicon would imply.

The epigenesis of the deprived complex can easily be traced from the nature-nurture wars and fixed intelligence controversies of the first half of the century. Davenport's (1911) Jukes family and Goddard's (1912) Kallikak family might well describe the asymptote of deprived circumstances. Unfortunately, environmental factors were not seen as contributory problems to the lives of these families, but as a natural outcome of the inferiority of their genetic pool. Hereditarily impoverished people naturally exist in impoverished environments, these authors held. Davenport and Goddard's purposes seem to have been to marshal irrefutable proof of hereditary transmission of criminality and mental retardation in support of their eugenic programs.

Thus the opening guns were sounded in a fight which was to continue for the next four decades. The rediscovery of the Mendelian papers and the zealous application of Mendelian laws to further eugenics as an answer to mental deficiency and criminality had a profound effect upon theories of development during the first five decades of the century. Freud's contribution to this position had a powerful impact upon practice. The basic assumption that intrinsic drives are present in the individual prior to interaction with the environment and that these drives are the basic forces in the determination of behavior suggested that an optimum environment should be provided into which the behaviors could emerge. But little might be expected of an active attempt to intervene, to modify, or to hasten intellectual development. Indeed, such intervention causes irreparable harm to the unfolding personality by producing reservoirs of anxiety which when released would engulf the individual in psychic upheaval. This myth is still with us in practice today.

With the translation of the Binet scales into English by Terman, the psychometric movement paralleled the developmental theories of heredity. The psychometrists, undoubtedly influenced by hereditary theory as well as their own findings, clung tenaciously to the concept of fixed intelligence and constancy of the IQ. Individual deviations in developmental patterns were attributed to errors of measurement rather than an actual change, since environmental influence or manipulation could not produce such changes.

Gesell and his associates took a very strong maturational emergent stance influenced particularly by their normative studies of child development. Empirical work such as Hilgard's (1933), which failed to produce a significant training influence on the development of motoric proficiency, was overgeneralized to all development. Gesell's emphasis upon genetic predeterminism was well illustrated when he wrote "The growth of tissues, of organs and of behavior is obedient to identical laws of development morphology" (1954. Italics mine). Of his five developmental principles only one suggests a place for environmental influence, that is, his concept of "individuating maturation". The hereditary door is hardly cracked, however, to let the breezes of environment enter, as his explanation of the principle demonstrates:

> This principle may help us to recognize the mechanism by means of which the behavioral organism achieves its species characteristics and yet at the same time, makes specific adaptations within its environmental field. From the moment of fertilization, intrinsic and extrinsic factors cooperate in a unitary manner, but the original impulse of growth and the matrix of morphogenesis is endogenous rather than exogenous. The so-called environment, whether internal or external, does not generate the progressions of development. Environmental factors support, inflect and specify; but they do not engender the basic forms and sequences of ontogenesis. (Gesell, 1954, p. 354)

The influence of these formulations upon intervention practice cannot be underestimated. Gordon and Wilkerson (1966) believe that tenacious adherence to the importance of innate determinants of behavior accounts for the prevailing *laissez-faire* attitude toward training of intellectual functioning and perpetuates the "monitoring approach" as opposed to a stimulating approach to academic and social readiness. This particular developmental stance and its concomitant translation into intervention practice has been characterized as the *Froebel cum Freud* approach (Gray and Miller, 1967).

In marked contrast to the genetic-hereditary theory of development is the interactionist position. Undoubtedly influenced by Watsonian behaviorism but more importantly by the accumulating empirical evidence which seriously questioned the validity of the concept of fixed intelligence, the interactionist position represents a rapprochement between the extremes of tabula rasa and the genetic blueprint. Here the belief is that behavior is primarily caused or mediated by environmental circumstances within the genetically given physical limitations of the individual. The critical determinants and molders of behavior are the encounters that the individual sustains with the environment. Such interactions are critical in determining the form and pattern that behavior will take. Hunt's (1961) analysis and synthesis of the research did much to establish the interactionist position and give it theoretical and empirical validity. A number of other reviewers in the past few years have marshaled support for the interactionist position (Kirk, 1964; McCandless, 1964; Haywood and Tapp, 1966; Gray and Miller, 1967; Hunt, 1967). In this context an excellent review of the animal and the human empirical evidence by Haywood (1967) marshals convincing support for the hypothesis that absence of appropriate environmental stimulation during critical periods in the organism's development can lead to later functional deficit. He further suggests that there are periods in which consolidation is taking place where stimulation is critical. He notes that the literature not only supports positive behavioral outcomes from environmental manipulations but also shows they can have a profound effect on the neural and physiological development of the organism as well.

The surge of intervention projects during the sixties is certainly based upon the interactionist position, but one cannot help but be impressed by the number of intervention programs which reflect the genetic-hereditary position in their treatment operations. We will assume that this is naivete' rather than recalcitrance. Before reviewing the intervention studies to evaluate such matters as these and others, I would like to turn to an examination of the converging forces outside of the professional field which in concert created support for a frontal assault upon cultural deprivation.

External Forces

The first of these is a highly developed industrial-technetronic[1] society versus an underdeveloped and agrarian society. The technological explosion following the second world war in the United States was viewed with alarm by many who believed it would lead to a spiraling unemployment rate as the machine took over man's work. This has not proven to be the case, however, for with few exceptions, the unemployment rate has been hovering around the three to four per cent level since the second world war. This overall figure, however, fails to reflect the selective factor operating in technical displacement. Hardest hit are those who can least afford it: the unskilled laborer and the inexperienced, many of whom are members of minority groups. It is with these groups that we find the lowest levels of abstracting ability, a skill essential for effective competition in a technical job market. Bruner, Olver and Greenfield (1966) have carefully documented in their studies of Mexican, Alaskan and Senegalese children the relationship between the level of abstracting ability associated with membership in an agrarian or technical society. The higher levels of abstracting ability were directly related to the amount of educational intervention the children had experienced.

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[1] Professor Zbigniew Brzezinski defines a society shaped culturally, psychologically, socially and economically by the impact of technology and electronics as technetronic. (Newsweek Vol. LXXI No. 5 Jan. 29, 1968, page 57.)

With industrialization comes concentration of the population in urban areas. The in-migration of a labor force to satisfy industry seems to create a *de facto* economic segregation with attendant overcrowding, over-use and decay of large sections of the city, school facilities serving the areas suffer from the same blight, overcrowding and antiquated equipment and resources.

A second and closely related condition associated with the clear identification of a culturally disadvantaged sub-group is the emergence of a developed versus a developing economy. The gaps between the have and the have nots appear to widen exponentially in a developed technetronic society. In developing economies, the affluent tend to be in a minority, while the have nots are the majority. In this instance, the complex of conditions associated with cultural deprivation is much more obscure. In the developed economy, the relatively affluent are in the majority, creating a much more visible poverty class.

A third closely related condition associated with emergence of a clearly defined culturally disadvantaged sub-group is a readily available education or a universally compulsory education. It is assumed that a society requiring highly developed abstracting skills must implement an educational program which is relatively lengthy to obtain the standard required. The tacit implication is that everyone will be prepared for an equal opportunity to share in the abundance available. Equal availability and compulsory attendance are necessary but not sufficient measures to insure development of the abilities necessary to compete effectively in a technical society. This became abundantly clear after the Brown versus Topeka decision in 1954 by the United States Supreme Court.

A fourth condition which heightens the probabilities of identification of a disadvantaged sub-group is the existence of culturally different groups as a part of the greater society. Conflicting values between the majority and the culturally different group retard assimilation of the sub-group into the main stream of the dominant society. Different languages tend to heighten the problem of assimilation. (see: Lesser, Fifer and Clark, 1965)

Identification of the Culturally Deprived

The terms "deprived" (Clarke and Clarke, 1953), "psycho-socially deprived" (Kirk, 1958), "culturally deprived" (Riessman, 1962), "socially disadvantaged" (Havighurst, 1964) are all used in current literature to identify the group whose children in the main are marked by three general characteristics during their school career: (1) progressive decline in intellectual functioning, (2) accumulative academic achievement deficit and (3) premature school termination or higher drop-out rate.

Clarke and Clarke (1953) appear to be the first to have attempted to isolate the adverse environmental factors associated with impaired intellectual functioning. They were impressed by the fact that within a group of institutionalized mental defectives, over fifty-one patients had increased their obtained scores on the Wechsler by eight points or more. They reasoned that the institutional environment was more favorable than those from which their subjects had come prior to certification as mentally defective. This led to an investigation of the home environments of the patients with a view to formulating a list of adverse home conditions which might be related to depressed intellectual functioning. The list of criteria developed included gross poverty, history of court intervention, negative parental attitude toward the child, evidence of poor household management including disorder and accumulated filth, evidence of child neglect in terms of diseases of deficiency, and so forth. Case histories on fifty-nine of the patients were then examined to establish documented instances of adverse conditions as defined by the criterion list. Twenty-five of the fifty-nine cases were found to have clear evidence of adverse home conditions. The mean IQ gains of the two groups were then compared and it was found that the mean IQ gain of 9.7 by those from adverse early environments was significantly greater than the gain of 4.1 of the group which showed no evidence of adverse conditions. These differences were significant at the .01 level of confidence. After a second validation study with similar results, the authors concluded that the results showed clearly that "intellectual retardation among such *deprived* people as have been studied here is not necessarily a permanent and irreversible condition." (Italics mine.)

Without belaboring the relative merits of the terms which have been used to label environmental conditions which are related adversely to intellectual functioning and academic achievement, all of the terms share common referents: economic privation, social and economic discrimination, inadequate and over-crowded housing, substandard nutrition, low parental educational attainment, unskilled laboring vocations, usually large families and often minority group membership.

To differentiate between the educationally retarded child and the culturally deprived child, it might be useful to extend McCandless' (1964) concept of *objective* and *effective* environment. He describes an adequate objective environment as one in which intellectually stimulating *objects and things* are available to the child. Adequate effective environments are ones in which intellectually stimulating *others* are interacting with the child and between the child and things. Using this concept we might describe disadvantaged children as *always* coming from deprived objective circumstances and perhaps also from deprived effective environments. In counter distinction, the educationally retarded child always comes from a deprived effective environment, and perhaps also from objective deprivation. The research task can then be defined as identifying dimensions of the objective and effective environments in isolation and interaction which are necessary and sufficient for development of competence.

Performance Characteristics of Culturally Disadvantaged

Four major classes of variables which have been identified where the culturally disadvantaged show deficits in performance when compared with advantaged groups are: (1) cognitive variables: these include those skills and abilities which are necessary to function at a level of abstraction required to be competent in a highly technical society. They include such abilities as language, and conceptual and perceptual skills. (2) Motivational variables: these include those sustaining states which support continued skill development and maintenance and orient the individual towards a high level of task performance. They include such things as need achievement, persistence, delay of gratification, and interest in school-related tasks. (3) Personal style variables: these include those variables which define the approach behaviors in problem solving situations such as self concept, success-failure orientation, impulsivity-reflectivity, and time orientation. (4) Physical variables: these include such variables as nutritional condition, large and small muscle coordination and other physiological factors which are necessary to sustain continued performance output.

In this section I will not attempt to survey the literature exhaustively, but will present findings representative of the functional categories related to competence. Some of these areas will be treated in depth by other major papers.

Cognitive Variables

Lesser, Fifer and Clark (1965) studied differential and mental abilities including verbal ability, reasoning, number facility and space conceptualization as they relate to social class and ethnic group membership. A large group of first grade children were divided into middle and lower class socio-economic groups according to their ethnic background: Chinese, Jewish, Negro or Puerto Rican. Social class placement was associated with significant differences in ability patterns. Ethnic group differences were related to both absolute level of each mental ability and the patterns among these abilities. Interestingly, social class and ethnicity interacted to effect absolute ability levels but not to effect ability patterns. Since the pattern of performance within ethnic sub-groups was similar across social class levels, it appeared that a selective perceptual and learning set was exerted upon the membership. Ethnic groups also apparently place differential importance upon skills, depending upon the child's sex. The findings of these investigators suggest that ethnic group membership, the child's sex, patterns of performance, as well as level of performance must be taken into consideration when planning intervention programs.

When compared with middle class subjects, disadvantaged children have been shown to be deficient in many aspects of language ability both qualitatively and quantitatively. (Siller, 1957; Bernstein, 1961-1962; Deutsch, 1965; Jensen, 1963; Irwin, 1948 (a) and 1948 (b).) Lower class children spend less time in interaction with adults (Keller, 1963), and when in communication with adults their verbalizations are significantly shorter (C. Deutsch, 1964). Hess and Shipman (1965) believed the paucity and impoverishment in the mother-child communication system is the heart of the lack of lanugage development among the disadvantaged. Their assessment of mother teaching styles and information processing strategies clearly indicated that the verbal output, the level of conceptualization, as well as the quality and focus of the mother-child interaction are significantly poorer among lower class subjects. On tasks which require precision and abstract language and conceptualization Deutsch (1965) found that middle class children were superior. Their superiority increased from the first to the fifth grades, leaving him to conclude that early intervention is necessary to offset the accumulative deficit these data reveal.

Recognition vocabulary, vocabulary of use, length of remark and complexity of sentence forms are all significantly below norms for disadvantaged children (Jones, 1966). These findings are consistent with those of Bernstein (1965), who interpreted his findings as indicative of differential encoding processes between classes.

He suggests that lower classes use a restricted language pattern which functionally retains group integrity and status. Group solidarity is maintained through such a restricted encoding pattern by excluding non-group members from sharing in the in-group communication. However, it also restricts the ability of the lower class person to communicate effectively with those outside the group. On the other hand, the middle class develops elaborated codes which are capable of transmitting information at high levels of intensity and meaning within a variety of social contexts.

Such elaborated codes require a high level of abstract usage. The ability to label and classify, use hierarchical categorization, discriminate relevant stimulus cues and dimensions is related to effective informational processing and is sub-standard among the disadvantaged (Ryckman, 1966; Spain, 1962; Clark and Richards, 1966; Jensen, 1966). Ryckman (1966) concludes from his factor analytic study of cognitive abilities, "Since general language ability is the major differentiating characteristic between class groups and is a central element for information processing, it appears highly essential to give language training a central place in the (intervention)program framework."

Motivational Variables

This category consists of those learned attitudes which maintain the task orientation of the individual and retain task relevant involvement necessary for achievement. They seem to be highly related to reinforcement contingencies and types of rewards available in the environment. Disadvantaged children prefer concrete rewards over more abstract reinforcement in learning tasks (Terrel, Durkin and Wiesley, 1959), while advantaged children perform at a higher level and prefer abstract reinforcements (Zigler and de Labry, 1962). Disadvantaged children prefer immediate reinforcement over delayed reinforcement even when greater rewards would be obtained under the delay condition. The ability to delay gratification is related to socio-economic status, higher intellectual functioning and such family variables as father presence or absence and conditions of family disorganization (Mischel and Metzner, 1962; Mischel, 1961; Kahl, 1965; Maitland, 1966; Stien, 1966). Strauss (1962) has documented the relationship of deferred gratification and need achievement to social class.

The affluent society has been characterized as an achievement oriented society. It is not surprising to find that members of the affluent main stream would evidence a high degree of achievement motivation. McClelland and his associates (1955) have provided much of the stimulation for study of n achievement. Of particular interest is the relationship of n achievement to family variables. Rosen and d'Andrade (1959) demonstrated that parents of high n achievement boys were more competitive, took more pleasure in problem solving experiments and were more involved with their children than parents of low n achievement boys. Fathers of high n achievement boys stressed independence and tended to let their sons develop self-reliance by giving hints to the solution of problems, rather than doing the problem for them. This is in interesting contrast to the mother teaching styles of Hess and Shipman's (1965) lower class subjects. Just as Hess and Shipman found greater language facility with their middle class subjects, who presumably show greater n achievement, so Buehr (1965) found that high n achievement boys manifest less dialect in their speech under achievement oriented situations.

Another motivational variable which holds promise of being useful is one which Haywood (1967) and his students have been investigating, referred to as the motivation-hygiene concept. The hygiene-oriented individual is motivated by extrinsic environmental factors, while the motivator-oriented individual is motivated by intrinsic self actualizing factors. Motivator-oriented individuals have been shown to be more persistent in tasks, learn discrimination reversal problems more quickly when relevant factors are held constant, and perform better on standardized achievement tests. The frequency of motivator-oriented children is much less in an institutionalized population than in a non-institutionalized population. Further research is necessary to see if the culturally disadvantaged group contains a disproportionate number of hygiene-oriented individuals.

Personal Style Variables

It is much more difficult to draw a direct line between this group of variables and adequate achievement. Gordon and Wilkerson (1965) suggest that such variables as self concept may not be an important dimension of the problem since either positive or negative self regard may be related to high achievement. With that word of caution in mind, it can be said that disadvantaged children do evidence significantly lowered self esteem than more advantaged children (Long and Henderson, 1967; Coleman, 1966; Keller, 1963). These feelings of inadequacy seem to be related to the child's perception of control over his environment and may well be related to failure experiences in the school environment. The concept of personal control implies a feeling of responsibility for that which happens to one and is related to social class (Battle and Rotter, 1963). Disadvantaged boys lack persistence in a school related task and evidence a lower sense of control over the environment than more advantaged children. Poor achievers among the disadvantaged groups give higher evaluative rating for school subjects in which they are achieving poorly than do better achievers (Greenberg, Gerver, Chall and Davidson, 1965). These findings seem to be consistent with a greater discrepancy between actual performance and level of aspiration found among the disadvantaged (Hieronymus, 1951; Keller, 1963).

Academic achievement is related to a personal style dimension which Kagan has labeled impulsivity-reflectivity. The more reflective response tendency is related to higher reading achievement, social class and intellectual ability (Kagan, 1965; Miller and Mumbauer, 1968).

Disadvantaged children are more present oriented than future oriented (LeShan, 1952). In a study of the relationship of home environmental variables to high and low potential success in school among Mexican-American children, Henderson (1966) found that the low potential families were more concerned with meeting daily needs than providing experiences that will have a future educational payoff.

M. Schoggen in her ecological studies of disadvantaged homes, reports that disorganization can be characterized in terms of lack of temporal and spatial organization. The most disorganized homes do not even have a regular mealtime. Regular mealtime represents the most basic time ordering event by which one can begin to develop time concepts and a future orientation.

Physical Variables

A basic need for productive achievement is a reasonable state of physical health. However, among the disadvantaged, the wherewithal to provide adequate medical care is unavailable. The proportion of the population suffering from chronic ill health because of the lack of medical care rises sharply as income decreases. The incidence of chronic health problems is almost four times as great among disadvantaged families (income under $2,000) when compared with more advantaged families ($7,000 annual income and up). (MacDonald, 1965).

Nutritional deficiencies are probably the greatest single deterrent to adequate physical health. Inadequate and substandard diets, particularly when sustained by the pregnant mother, are the cause of a higher rate of infant mortality, prematurity, and birth defects among the disadvantaged than any other single cause. Liebow (1967) points out that pregnant disadvantaged women often eat as many as four boxes of Argo laundry starch a day.

Intervention Efforts and Their Findings

While the theoretical winds swirled around the professional world during the thirties, dealing with the day to day problems of children in institutions for the mentally retarded and those parentless ones assigned to an orphanage was a difficulty that had to be dealt with immediately no matter what the final resolution of those more lofty arguments might be. But those pragmatic decisions had an impact upon the theoretical questions as well as the lines of future research. This perhaps is the self-correcting mechanism that science values so highly.

It was out of the day to day concerns of working in an orphanage setting that one of the landmark intervention studies developed. Certainly the observations that Skeels and Dye (1939) made upon their two young placements from the orphanage to the institution for the mentally retarded have the character of serendipity associated with Fleming's petri dishes.

Skeels' (1966) description of these two young children and account of their progress are poignant indeed. In Skeels' words, "The youngsters were pitiful little creatures. They were tearful, had runny noses, and sparse, stringy, and colorless hair; they were emaciated, undersized, and lacked muscle tone or responsiveness. Sad and inactive, the two spent their days rocking and whining."

Psychometric examinations indicated serious mental retardation, and the youngsters were considered unplaceable with the resulting recommendation that they be placed in an institution for the mentally retarded. They were so committed at the age of fifteen and eighteen months, respectively. Six months after transfer, the children gave a completely normal picture of two young toddlers. Unmistakably, the evidence indicated their mental development was well within normal range for their ages. Subsequently they were transferred back to the orphanage and placed in adoptive homes soon after.

In order to find an explanation for the changes that had occurred, Skeels reviewed the childrens' history within the institution for the mentally retarded. Here he found that each of the children had been adopted by one of the ward inmates and given special care and mothering experiences in great abundance by the patients as well as the staff. Mounting evidence suggested that the essential element was the existence of a close and warm relationship on a one-to-one basis with a significant adult as well as experiential stimulation from important others in the environment. (Skodak, 1939; Skeels and Dye, 1939)

From this experience, a plan evolved for early placement on a "house guest" basis of an experimental group whose development was so delayed that adoptive placement seemed out of the question. Ten girls and three boys were so placed and at the time of transfer they had an average chronological age of 19.4 months with an IQ of 64.3.

After placement of the experimental group, a contrast group was established from a cottage group at the orphanage. At the time of usual adoptive placement, the twelve contrast subjects were considered normal in mental development and placeable; however, for a variety of reasons, all twelve had not been so placed. The time of the first testing, the average chronological age of the group was 16.6 months with a mean IQ of 86.7.

After a period of approximately two years, the experimental group showed an average gain of 28.5 IQ points, while the contrast group showed an average loss of 26.2 IQ points. In the first followup study, eleven children in the experimental group had been placed in adoptive homes and maintained their earlier gains in intelligence while the two not so placed declined in rate of mental growth. The contrast group showed a slight gain in IQ, but were still mentally retarded to a marked degree.

After twenty-one years, Skeels (1966) completed a followup study of the twenty-five subjects. The two groups were found to have maintained their divergent patterns of competency into adulthood. Educationally the experimental group completed a median of twelfth grade, while the median attainment for the contrast group was less than third grade. All members of the experimental group were self-supporting, while in the contrast group of twelve subjects, five remained wards of institutions including one who had died during adolescence. The median income for the experimental group in 1963 was $5,220, and for the contrast group $1,200. Of the eleven married members of the experimental group, nine had children for a total of twenty-eight. These second generation children had a mean IQ of 104, with no indication of mental retardation or abnormality in the group. In the contrast group, two of the subjects had married. One of these marriages produced four children, all of average intelligence; the other had one child with marked mental retardation and possible brain damage.

The contrast between the attainment of these two groups is so striking that it is important to take a look at the dimensions of the early intervention where the wheels of success were put in motion for the experimental group. The orphanage environment was characterized as overcrowded, limited in resources and understaffed, leading to de-personalization, mass handling and an affectionless existence. On the other hand, after transfer to the institution for the mentally retarded and ward placement, a patient or attendant emerged as the mother surrogate for the child, spending great amounts of time playing, talking and training the child in every way. Living quarters were spacious for indoor play and activity, and the outside playground contained wheel toys and apparatus for group play. Great pride was taken by the inmates in their children, and a mildly competitive climate nurtured direct teaching of appropriate skills. As soon as the children could walk, they began to attend a nursery school or kindergarten where new play materials and additional language stimulation were provided. Additional enrichment experiences such as moving pictures, school productions and chapel services were a regular part of the regime.

Three major points can be made concerning this experimental treatment: (1) a stimulating objective environment was provided. Toys and space to manipulate objects and apparatus both indoors and outdoors were available. An additional preschool and kindergarten experience was provided. This stimulating objective environment was continuously available to the child. (2) A stimulating effective environment was provided. "Adoption" by one significant other who created an emotional and motivating relationship was an essential ingredient of the effective environment. The competitive climate, where interested others contributed to the physical and cognitive stimulation of the child, created a continuous mediating interaction. (3) The mean chronological age at the time of placement was 19.4 months with a range from 7.1 to 35.9 months. Placement came at a time of maximum consolidation of intellectual functioning.

Short Term Interventions

An early term intervention study specifically directed toward improving the language ability of institutionalized orphans was carried out by Dawe, (1942). Her speech and language training program extended over a seven and one half month period on week ends, and was supplementary to regular nursery school and kindergarten attendance. Dawe used a matched pairs experimental design. Her experimental group prior to training had a mean IQ of 80.6, while her comparison group had a mean of 81.5. In addition, she matched for such variables as sex, chronological and mental age and vocabulary as well as school group attended. Her intervention included extensive story and poem reading to the children, picture reading and discussion, and vocabulary and concept development. On post testing, a significant gain for the experimental group was obtained, a mean of 94.8, while the controls dropped an average of two points. Growth in vocabulary and in information test scores was also significantly greater for the experimental group.

Another early experiment involving training in specific skills was undertaken by Boger (1952). His subjects were rural children, both Negro and white, in grades one to four. Using intact classrooms, the experimental group consisted of fifty-four subjects, while the comparison group numbered fifty. He hypothesized that the rural child lacked skills in perceptual discrimination and reasoning ability and designed the intervention to include practice in perceiving spatial relationships, detecting likenesses and differences in both pictorial and geometric patterns, hand-eye coordination and noting significant details. Direct training in the skills extended over a five month period, prior to which base line data had been obtained. Post test data were collected following the termination of the experimental period and again after a five month time lapse. Both Negro and white experimental children showed significant gains on group tests of intellectual ability, seven and eight points respectively, while the control group's gains were negligible. These gains were maintained over the five month period after termination of the training sessions.

In discussing the experimental results, Boger attacked the inaccurate picture that group measure gave of the abilities of rural children instead of emphasizing the importance of providing needed skills to deal effectively with academic tasks. This speaks rather eloquently to the grip that the concept of fixed intelligence has held on educational practitioners.

In a six week, short term experimental intervention, Brazziel and Terrel (1962) provided an intensive readiness program for twenty-six Negro first grade children. The readiness program was designed to develop vocabulary, perceptual ability, increase word reasoning and the ability to follow directions. The classroom intervention program was supplemented by parent meetings held once a week, and a special educational TV program which the children watched at home for thirty minutes.

At the end of the six week intervention, Metropolitan readiness tests were administered to the experimental class as well as to three other non-experimental classes in the same school. The non-experimental groups had a mean attainment level of the fifteenth percentile, while the experimental children attained a mean placement at the fiftieth percentile, a substantial and statistically significant difference.

In a short term intervention where the treatments were quite explicit, Carter (1966) worked directly on improving language ability. Carter used a matched pairs design. His thirty-two Negro culturally disadvantaged pairs were equated for chronological age, sex, Binet mental age, and total language age on the Illinois Test of Psycho-Linguistic Ability. An intensive forty hour program covering ten weeks was instituted with the experimental group using the Peabody Language Development Kit, supplemented by stories and additional related activities. Two special teachers worked with small groups of eight children at a time for fifty minutes each day, four days a week, under careful supervision.

At the end of the intervention, ITPAs, Binets, Ammons, the California Test of Mental Maturity and the Lee-Clark Reading Test were re-administered. Gains in total language age on the ITPA were significantly greater for the experimental group. Gains of eleven points were posted for the experimentals, two points for the controls. Similar gains were obtained on the California Test of Mental Maturity, the Ammons and the Binet, but no significant differences were obtained on the Lee-Clark Reading Test.

Since the treatment was focused upon the development of oral language, it is not surprising that the reading measure failed to show significant differences. Direct and specific training did get significant results on criterion measures that would be most likely to reflect change. Followup to the study would be valuable to see if the differential positive gains for the experimental groups generalized to other areas.

Thompson (1966) attempted to evaluate the effects of an eight week Head Start summer program on the achievement and adjustment of children from varying socio-economic levels. A typical daily three hour instructional program followed Head Start guidelines. Thompson said, "The major purpose was *not* to teach specific skills of an academic nature, but to provide a situation in which children could be *exposed* to a broad range of experiences which would enhance their readiness for the formal school setting." (Italics mine)

The evaluation design was somewhat complex, consisting of two phases in which different groups participated. Seventy-eight five year olds and ninety-five six year olds participated in the summer program, which constituted Phase I. The ninety-five six year olds plus a control group of sixteen were the subjects of Phase II, which was primarily designed to evaluate the effect of the summer program upon first grade achievement. Descriptive data were collected on all the participating families.

Both the five and six year old groups made significant gains on the Caldwell Preschool Inventory; however, there was no carry-over into achievement by the six year old group as measured by the standard achievement test administered at the end of the first grade. Initial differences obtained on a Behavior Inventory, where the child was rated on behaviors that teachers consider to be part of appropriate classroom decorum, washed out over the summer and remained stable through the first grade. The descriptive data that were collected on the families gave no new insight since it was primarily demographic and consistent with what was already known. Thompson concluded that children from all economic levels benefited from the short term program!!

Three short term intervention studies are of interest because of their work with infants. Sayegh and Dennis (1965), working in Beirut, Lebanon, with institutionalized infants provided experiences in an attempt to offset the severe motor retardation hypothesized as the effect of minimal stimulation, attention and handling. Experimental and contrast groups showed a mean developmental quotient on the Cattell Developmental Schedules of forty-three and forty-six respectively. The treatment provided the experimental infants included experiences "designed to accustom them to an upright position, to encourage interest in objects, and to develop skill in object manipulation." These experiences were administered for an hour per day over a period of fifteen days. The experimental group showed an increase in developmental age four times the average obtained in the pre-experimental period, although little gain was obtained by either group after the experimental sessions.

A second intervention study of relatively short duration was conducted by White and Held (1966) with infants from an institution. Normative data indicated that "fisted swiping" appeared at a median age of sixty-five days and "top-level reaching and grasping" appeared at a median age of one-hundred forty-five days among their infants. In order to test the hypothesis that intervention could decrease the median age at which these two psycho-motor abilities appeared, they began a regime of extra handling for twenty minutes each day from day six to day sixty-three in an attempt to increase tactile-vestibular input; provided a simple visual stimulus in the form of a stabile between days thirty-seven to sixty-eight and a more complex stabile from day sixty-eight to one-hundred twenty-four in order to enrich the visual surroundings; and after each of three daily feedings, placed the infant in a prone position for fifteen minutes in an attempt to increase motility. The effect of this intervention was to reduce the median age for the onset of "fisted swiping" to day fifty-eight and reduce the median age of the onset of "top-level reaching" to eighty-nine days.

While White and Held's infants were institutionalized as Sayegh and Dennis' were, Irwin's (1960) subjects were "at home" infants between the ages of thirteen and thirty months. He constituted an experimental group of twenty-four and a control group of ten infants to test the hypothesis that systematic reading to infants would have a significant effect upon their verbal production. Each mother in the experimental group was asked to read to her child for fifteen to twenty minutes daily and to systematically take time to point out pictures, talk about them, make up original simple tales and to use extra stimulus materials. Frequent consultation with the mothers provided continuity for the program. Spontaneous vocabulary was recorded by observers for both groups. After seventeen months there were significant differences in the amount of spontaneous vocabulary, and these differences increased in favor of the experimental group after that time.

A similar study to that of Irwin's was conducted by Fodor (1966) with twenty-four experimental and twnety-four control children. The twenty-four experimental children received a daily regimen of reading for a minimum of twenty minutes over a three months period of time. All of the intervention work was done by the experimenter, his wife and a paid assistant, rather than the mother. In addition to reading graded stories, the experimenters attempted to systematically build word reference associations and to administer high verbal reinforcement for correct labeling of objects and pictures. Post-test differences indicated a significant gain in receptive vocabulary over that of the control group, with somewhat smaller gains in expressive vocabulary. There was a trend toward a differential gain in total words emitted during the course of thirty consecutive expressive units in favor of the experimental group, but it failed to reach the experimenters' pre-set level of statistical confidence. Interestingly, there were no differences in gain by socio-economic status level. This suggests that perhaps for the low socio-economic youngsters in the sample the impoverished language environment had not yet made itself felt. Indirectly it also adds support to Haywood's (1967) critical period of consolidation hypothesis.

The importance of ordering tasks in appropriate sequence is underscored by a short term intervention by Sigel, Roeper and Hooper (1966). Using nursery school subjects, they developed a training procedure for the acquisition of Piaget's conservation of quantity.

Their procedure included special training on multiple relations, reversibility as a way of inducing a grasp of conservation of quantity, and multiple classification experiences. In comparison with the control subjects, significantly higher levels of performance were obtained by the experimental subjects. Verbalizations were also more appropriate and sophisticated. These investigators believed that failure of previous attempts to teach conservation was due to the lack of concern for the prerequisite stage related operations.

From these short intervention studies, the following generalizations might be tentatively proposed: (1) Where limited intervention objectives in the psycho-motor and cognitive areas are clearly delineated and intervention techniques are specifically designed to accomplish those objectives, significant gains can be obtained over a short intervention period. (2) Such gains can be obtained over the chronological age range from neonate through early school years. (3) Little evidence is available concerning the longevity of obtained effects nor the effect of specific gains on more complex skills.

The effects of long term intervention. The rationale for long term intervention lies in the complexity of the problem. Multiple causation, multiple outcomes and the multiple processes involved require a more extensive involvement. Early intervention efforts were aimed at radically changing the environment in which the disadvantaged child was developing and substituting an enriched and stimulating setting for the child's growth (e.g. Skeels and Dye, 1939; Kirk, 1958). Observed changes in the objective environment were striking, and while the changes in the effective environment could well be as striking, illuminating the relevant characteristics was and is a profoundly difficult task. A "genuinely warm and friendly atmosphere" is a gross over-simplification of the relevant dimensions of the effective environment. Relatively little descriptive space is given in the reports of these early studies to the experimental preschool or kindergarten program. In most instances, it is described in terms of a group free play program designed to develop healthy physical bodies, mature social relationships, and creativity. Such a program was consistent with the prevailing preschool and kindergarten philosophy of unfolding maturational abilities of the thirties and forties.

In an early longitudinal study that had an impact upon the field of special education, Kirk (1958) investigated the effects of preschool training on young, retarded children. Two experimental and two comparison groups were constituted in the age range of three to six. Fifteen children attended a preschool at the mentally retarded institution where they resided, while a second group of twelve at the same institution did not receive the preschool program. Twenty-eight children living in a community received a specially designed preschool experience, while twenty-six children served as a contrast group in the same community.

In addition to psychometric data collected before and after the preschool intervention, the children were classified under six different categories: average, low-average, borderline, high-educable, low-educable, questionable educability, and uneducable. A shift in either direction from one category to another was considered a significant change. Over the three years that the institutionalized children attended the preschool, an average IQ gain on the Stanford Binet of ten points, ten points on the Kuhlmann Test of Mental Development, and ten points on the Vineland Social Maturity Scale was obtained. The twelve contrast children dropped in Stanford Binet IQ an average of seven points: four points on the Kuhlmann and twelve points on the Vineland. Six of the fifteen children in the training group were paroled from the institution while none of the twelve contrast children were paroled.

Part of the experiment dealt with evaluating the effects of a substantive change in environmental stimulation. Four children in the community group were removed from their inadequate homes and placed in foster care while continuing their preschool experience. Twelve children remained in their homes, rated as inadequate, during the course of their preschool training. Sibling and twin controls who did not receive the preschool intervention program were compared with the twelve experimental children during and after the training program. Of the four children who were removed from their inadequate homes, all increased their rate of development at least one level in classification, one increased two levels, and one increased three levels. Of the twelve who remained in their inadequate homes, two-thirds increased their rate of development, while one dropped one classification level. The latter subject attended the preschool only about half the time, however. In the sibling comparison group, only two children increased their rate of development, a third dropped in classification, while one half retained the same rate of growth.

Kirk concluded from his data that children in institutions or from inadequate homes derive significant benefits from preschool experience. His mentally retarded subjects from adequate homes tended to increase their rate of development upon entering school, leading Kirk to believe that preschool experience may not be as crucial for this group as it is for institutionalized and mentally retarded children from inadequate homes.

As the converging forces of the fifties began to be felt, a segment of the population inadequately equipped to fully participate in the affluence of the dominant society was clearly identified. Remedial measures were sought. One of the dominant themes was early childhood intervention. A means of changing the inadequate objective environment was placement of the child in a stimulating preschool or kindergarten program. Changing the effective environment also became a dimension of manipulation. Such manipulations as changing the role of the teacher from passive observer to active participant, adding more adults to the classroom to increase the availability of effective environmental agents, providing ancillary personnel to bridge the gap between the stimulating and the inadequate environment and finally attempting to manipulate the inadequate effective environment of the home through parental involvement in the education process have been studied.

Although not reported until almost nine years after its inception, the Pine School Project (Kugel and Parsons, 1967) is of particular interest because it represents a total push program to ameliorate the effects of familial mental retardation. Rather than process manipulation, the investigators attempted to marshal the conventional community resources to assist the family. Medical services, social work assistance, psychological tests and a conventional preschool program were focused upon the problem. Since no comparison group was established because of lack of funds, this is essentially a descriptive study of the family development over the intervention period.

Sixteen index children and twenty-one of their siblings attended the experimental school for one to three years. Physical examinations and a study of medical histories were made each year of the intervention. Electroencephalographic tracings, anthropometric measurements, stature pictures, wrist-bone-x-rays, and head circumference measures were also collected. Nutritional and dietary records were made in the home regularly.

All families were seen by a social worker; however, the service rendered was greater for some families because of the severity of the crises they had to meet. All families were visited at least once a week during the two years of experimental work. After that time, the social worker's hours were curtailed and some families were visited only twice a year.

Standardized tests of intelligence and personality measures were administered periodically to all of the school children. Anecdotal records were also kept by the teachers.

The experimental school was housed in a temporary structure where space was available for two classrooms equipped with the materials and apparatus usually found in nursery schools. Children attended school six hours a day, five days a week throughout the year, including an eight week summer session. The regular teacher was always in attendance, augmented by student teachers from time to time. "The basic tenets and methods of a regular nursery school program were utilized. Initially it was thought that the usual nursery school curriculum and the usual approaches would need to be modified for this group of deprived, retarded youngsters. This proved not to be the case--one of the many surprises in this study."

Nearly half of the members of the sixteen lower class families were mentally retarded. Analysis of medical records indicated that the children who were regarded as mentally retarded were so in part because of mild encephalopathy, in part because of psycho-social factors, and often as a result of both. Children in the younger age group, two to four, made the largest IQ gain between first and last test, an average of nineteen points, while the older age group, five to seven, made an average increment of eleven points between first and last test. The average gain was greater for the children with normal EEGs than for children with abnormal EEGs.

Some improvement was made in diets in the homes through the work of the home economist. But the rate of development for the children was much slower physically than for the United norm. Kugel and Parsons believed this lower growth rate was attributable to poor nutritional histories.

Individual and group instruction in homemaking skills--cooking, cleaning, and sewing--brought observable changes in the mothers' coping behaviors. In group sessions, they not only developed practical skills, but better interpersonal relationships. At the beginning of the project they had few if any social contacts outside the home. One of the very difficult problems that the investigators encountered was the lack of suitable materials for the teaching of skills. Simple, concrete, practical and repetitive instruction, with consistent followup for consolidation, seemed the best instructional approach for the adults.

The authors concluded that early intervention, perhaps before three, including intensive work with the total family, is necessary to bring about lasting change.

One of the most active groups reporting in the literature from overseas is located in Israel. In the developing kibbutzim, with their special child care arrangement, a natural intervention laboratory is available for extensive study of the effects of early work with children. In 1964, Sarah Smilansky made a report on an experimental program for culturally deprived oriental Jewish children. The program was directed toward preparation for school requirements and development of specific deficiencies. Four experimental and four control kindergarten classes were studied with a normal class size of approximately thirty-five children. Regular teachers were used, but in the experimental classrooms additional assistance and materials were provided by specialists. Carefully detailed objectives in keeping with the program goal were the guide to intervention procedures for the experimental groups. The control groups had regular kindergarten instruction.

Following the intervention year, the experimental groups obtained an average superiority of six points on the Stanford Binet and ten points on the WISC contrasted with the regular kindergarten attenders. While all of the experimental group children showed some gains on the criterion measures, the children who scored lower on the initial tests obtained the greatest gain over the intervention year (S. Smilansky, 1964).

A later study by Smilansky (1966) on the relative contribution of different intervention procedures to learning ability and achievement progress revealed the following to be significant classroom operations: (1) active guidance by the teacher in learning the underlying rules for task success in contrast with learning through general instructions; (2) directed performance of specific task with the aid of a clear frame of reference; and (3) post performance verbalization. A fourth operation, setting of specific achievement demands adapted to the ability of the child, was not found to influence improvement in the child's achievement.

Smilansky's contribution to the question of "how?" is as important as her contribution to the question of "what?" Specification of the environmental agent as an active participant in the learning process is of major importance to understanding intervention processes.

The Perry Preschool Project (Weikart, 1967) is a preschool intervention project which has been in operation since 1962 in Ypsilanti, Michigan. The preschool program is described as a carefully sequenced program of activities planned by the teacher according to a specific developmental theory. The primary goals are for cognitive and language development. While the materials and activities frequently used are similar to traditional nursery school materials, they are used by the teacher to achieve predetermined goals. Weikart's program might best be described as developmental in itself, since over the three years of reported operation, it has evolved from a language development program using verbal bombardment techniques to a Piagetian oriented program. An interesting feature of the program has been the weekly afternoon home visit by the teacher for individual instruction. On these visits, the mother was actively encouraged to participate in the lessons.

Four groups of children with appropriate controls have been involved over the three years of operation. The Wave 0 group of thirteen entered the preschool at the age of four. Their progress has been followed to the completion of the first grade. Wave I began preschool at age three, and at the last reporting date had finished kindergarten. Wave 2 and Wave 3 also began at chronological age three, Wave 2 having completed two years of preschool, and Wave 3 having completed one year of preschool at the time of reporting. Significant differences were consistently obtained between the experimental and control groups after the first year of preschool participation. The average increase in Binet IQ scores for the experimental groups was fifteen points. For the two groups which had two years of preschool prior to entering kindergarten, a statistically significant difference of thirteen points was obtained. Only one group had completed first grade at the time of report. Gates Reading Tests and California Achievement Tests results were significantly greater for the experimental groups on all subjects.

Weikart points out three consistent findings: (1) in each experimental group a dramatic spurt in IQ scores was obtained after one year of intervention. (2) Control groups make significant gains on entering kindergarten, but the growth spurt is not as great as that initially obtained by the preschoolers. (3) After the second intervention year, experimental groups experience a small loss, but recover during the next year.

One of the outstanding early intervention programs has been Klaus and Gray's (1967) Early Training Project in Tennessee. It was a particularly well designed field research which embodied followup study as the children progressed through the primary grades.

A population of sixty-two children was identified in a small Tennessee town whose families met the housing, parent level of education and occupation criteria established as defining the culturally disadvantaged. The children were randomly assigned to one of three groups: a three year treatment intervention, a two year treatment intervention, or a local control group. A fourth comparison group was established in a similar town some distance away as a distal control group.

Intervention techniques and content were developed based on research of differential child rearing patterns, intellectual and attitudinal differences related to social class, and extensive observation in disadvantaged homes. The program consisted of two parts: (1) a ten week preschool classroom experience successively for two or three summers, depending upon the treatment group, and (2) a home based instructional program, implemented by a staff home visitor between the summer classroom experiences for the children. The classroom program centered around two major classes of variables, attitudes toward achievement and aptitudes for achievement. Specific experiences were designed to foster growth in these areas. The ratio of adults to children in the classroom was approximately one to four or five, which maximized the amount of adult-to-child interaction, provided effective role models, and encouraged individualization of instruction. (See Gray, Klaus, Miller and Forrester, 1966, for a more extensive description of the procedures used in the classroom.)

A variety of evaluative instruments was used over the experimental period and the followup. These included the Binet, PPVT, WISC, ITPA, Metropolitan Readiness and Achievement Tests, and the Stanford

Achievement Tests. The significant gains obtained by the experimental groups when compared with the control groups had been maintained through June of 1966. As with similar studies, initial gains were dramatic, the gain was held until entry in school, and then a slight decay began to appear. The magnitude of the differences between groups decreased when the comparison group entered school, but subsequent to their initial but lesser spurt, the decay began to be evidenced in these groups also. Results on the ITPA, WISC, and PPVT are similar to those obtained on the Binet. On the Gates and the Metropolitan Readiness Tests, significant differences in favor of the experimental groups were obtained in ten of eleven comparisons. Mean score differences on the Metropolitan Achievement Tests were in favor of the experimental groups. Over the two years there were significant differences in word knowledge, word discrimination (first year only) and reading. No significant differences were obtained between experimentals and controls in arithmetic or spelling. On the Stanford Achievement Tests, word reading and paragraph meaning show significant differences in favor of the experimental groups but equal achievement in other subject matter areas tapped by this test.

Particularly impressive is the evidence Klaus and Gray have marshaled for diffusion effects within the community as well as within families. In a number of comparisons between the proximal and distal control groups, significant psychometric differences were found which suggest a community diffusion effect. Anecdotal evidence and studies of the intercommunication patterns between the parents of the three groups suggest that a somewhat complicated communication net existed among the parents of the community groups. Anecdotal evidence bears witness to the attempts by the in-community control group parents to augment the experiences of their children modeled on the project's intervention. Evidence of within-family diffusion to younger siblings of the experimental children is reflected in Binet comparisons with the younger siblings of the control groups. Here a thirteen point IQ difference was found in favor of the experimental younger siblings. Further studies of diffusion phenomena are being carried on currently (Miller, 1967).

Klaus and Gray are refreshingly cautious concerning their results at a time of great enthusiasm over the effects of intervention. They point out that their contact time with the families represents a very small proportion of the time a child spends in adverse environmental conditions before he gets to school. (By my calculations, the maximum amount of contact the investigators could have had with any one child was six hundred hours. This represents less than two per cent of the average waking hours that a child has from birth to six years of age.) That a minimal contact such as represented here can have the effect that it apparently has had is indeed optimistic. The question is not whether intervention, but how can we be more effective. Klaus and Gray's work suggests some potentially fruitful directions.

Hodges, McCandless and Spicker (1967) have just completed a series of three consecutive studies with groups of five year old severely "psycho-socially disadvantaged" children. The small town and rural Appalachian children included in the study scored between 50 and 85 on the Binet. The focus of the studies was upon curriculum and teaching variables, specifically the cognitive, affective and motor development of culturally disadvantaged children. The original research concept was one of replications. The intent was to replicate the basic study twice to accumulate large numbers of subjects within each of the treatments. However, the diagnostic curriculum was modified in order to take advantage of experiences gained from the previous study so that each study is unique and not an exact replication of its predecessor.

The objectives of the study were to develop a curriculum based upon diagnostic instruction, to evaluate the efficiency of diagnostic tools in curriculum development, to develop and refine curriculum strategies, and to evaluate the effectiveness of the curriculum on the subjects in the study.

For each of the studies three groups were constituted: an experimental preschool (EPS) group who received the diagnostic instructional program, a kindergarten contrast (KC) group who were enrolled in a regular kindergarten program, and an at-home contrast (AHC) group, who were tested but received no intervention program prior to school entrance. Contact was made with the home for attendance maintenance and data collection purposes only. Subjects were located in several small towns around Bloomington, Indiana.

The location of the various groups shifted from study to study depending upon availability and the ubiquitous intrusion of Project Head Start.

In general, the curriculum was an attempt to produce an optimal match between the child's past history and his present performance level on such things as language development, fine motor development and social and emotional development in order to design specific remedial procedures to fit the child's particular needs. Heavy emphasis was placed upon language development. The formal aspects of the language program were developed by Stearns (1966), who has written a detailed account of this part of the program.

A number of criterion measures were used both during the intervention series and in followup. The major areas assessed were intelligence, language development, motor skills and personal-social behavior. The directional hypotheses were in favor of the experimental preschool group over the kindergarten contrast group over the at-home comparison group.

Two measures of intelligence were administered, the Stanford Binet and the Columbia Mental Maturity Test scale. The hypotheses concerning intelligence scores were supported at the end of intervention. After a year in school, the AHC group made significant gains so that the only significant superiority was the EPS group over the KC. In the area of language on both the PPVT and the ITPA, EPS groups improved significantly more than the KC groups and the KC groups significantly more than the AHC. After the first grade experience, the significant differences had washed with the spurt of the AHC group. In motor skills, the preschool attenders obtained significantly greater scores than the AHC group, but these differences were lost after first grade attendance also. Measures of the personal-social adjustment dimension were available only at the completion of the first grade. On teacher ratings, where paired comparison judgments were used, the EPS children were significantly superior to the other two groups, which did not differ significantly from each other.

On standardized achievement data, report card marks, and teachers' judgment of achievement, reliable differences between groups did not materialize. In light of these findings, which conflict markedly with the results of the predictor tests, the investigators were led to ask the question, "Has the experimental preschool experience raised them, formally, to the level of normal children, yet made them under-achievers?" They conclude: ". . . an intervention program limited to school is insufficient to guarantee later school success, even though it profoundly affects the formal predictors of success. At the end of second grade, the EPS children--essentially normal in their intelligence--are achieving almost a year behind expected grade level. They are achieving better than the other study groups, but not significantly so. It may be that this retardation in school performance is a function of non-intellective rather than intellective factors. Thus, home intervention, while probably useful in the intellective area, is essential in ameliorating the attitudes and other non-intellective factors that are necessary for school success."

Over the past several years, investigators at the University of Illinois have been studying an approach to preschool education which is quite alien in content and technique to traditional concepts. Formal subject matter is taught in a highly structured, direct verbal instruction program. Since language is the area of greatest weakness among disadvantaged children, language remediation and development form the core of these programs. In addition to language, arithmetic, reading, and social studies or science are usually emphasized with some additional time being devoted to activities which are supportive of the direct instruction content. Story reading, music and directed play with perceptual type toys are available for free choice. For the formal direct instruction, the large group is broken into three smaller groups, each led by a teacher in a small room. The facilities seem to have some control over the amount of direct instruction administered.

Because language plays a central role in the instructional program, heavy reliance is placed upon the Illinois Test of Psycho-Linguistic Ability as a criterion measure as well as a diagnostic instrument. Other instruments are used to evaluate progress as well.

Karnes, Wollershein, Stoneburner and Hodgins (1966) made a comparative study of the effectiveness of a highly structured direct instructional program and a traditional program for culturally disadvantaged children. Their sample met the usual socio-economic and home criteria for disadvantaged families. Sixty children were selected for placement in the program and assigned to experimental or comparison classes from three stratified intellectual levels on a random basis. Adjustments were made in the racial and sexual composition of the classes. Two experimental groups and two comparison groups of fifteen children each were thus constituted.

Because of attrition, the final data analysis was based on twenty-seven experimental and twenty-eight comparison children. Pre-test measures show no significant differences between groups on any of the indices.

This program concentrated on language development, mathematics, and social studies or science in the direct formal instruction. Each teacher kept anecdotal records on each child in her group in order to be able to individualize her instruction. Subject matter was presented most frequently in game format, with a heavy emphasis upon manipulative and multisensory materials. The investigators held that reduced teacher-pupil ratio promoted immediate feedback and differentiation of instruction insured success. These factors, they felt, were highly relevant to motivation.

The experimental subjects obtained a fourteen point IQ gain on the Binet compared to an eight point gain for the comparison groups, a significant difference. There were no significant differences in gain on the ITPA. Both groups achieved mean gains of fourteen months during the seven month program. The mean gain on the PPVT was in favor of the comparison groups, although it did not reach statistical significance.

The Frostig Developmental Test of Visual Perception was used to compare progress in the area of visual perception. The experimental groups posted a net gain of 18.25 to the comparison groups' gain of 13.32. While the post-test differences were significant, the experimental groups were superior at the pre-test time, and the gain over the experimental period was not significantly different for the two groups.

The experimental groups' performance was significantly higher on the Metropolitan Readiness Test. All comparisons for the subtests were in favor of the experimental group at a significant level.

In a demonstration project, Bereiter (1967) explored the limits of attainment which disadvantaged preschool children might reach, given a structured direct instruction program. It was assumed that disadvantaged children differed from others in what they had not learned previously. Therefore, by more efficient engineering of the teaching process in critical areas of knowledge, rapid progress could be made to catch up with more advantaged peers.

A sample of fifteen four year old children was selected on the basis of older siblings with educational difficulties, homes where cultural deprivation was assumed to be the primary contributing factor, and the ability of the target child to produce some intelligible verbal response on the ITPA. No comparison group was used to evaluate the results of the two year program. Instead, evaluation of the program was based upon its measurable effects on achievement and language test performance where the test norms provided the base line. The ITPA, the Stanford Binet, and the Wide-Range Achievement Test were the measures employed for the evaluation.

An extensive description of the methods and procedures used in this program and subsequent ones has been published by Bereiter and Engelmann (1966). Language, arithmetic and reading formed the core of the formal curriculum during the first year. During the second year, formal language instruction was discontinued and replaced by science and verbal reasoning.

The language curriculum was developed on the basis of logical requirements of the communication system that would permit academic teaching. The program was structured to teach language and logic rules by analogies, and to maximize the verbalization of such responses.

Arithmetic was taught as a kind of "science of counting" without an attempt to tie natural numbers to real life phenomena. As progress was made, concrete demonstrations were introduced as a part of the gradual de-structuring of tasks.

The mechanics of reading as a rule system was the beginning point with reading instruction. Initial vocabulary was restricted so that a series of explicit rules could be taught. After learning the application of these rules, a phonics approach was instituted to generalize reading skill.

Half of the two hour school day was less structured, but designed to amplify and reinforce the formal teaching hour. Music, story time, and a ten minute free play period were included.

Over the two year intervention period, enough language learning had taken place as measured by the ITPA to move the group from a year or more below average up to an average level of performance for their chronological age. Similar findings on Binet MA were obtained. On the Wide Range Achievement Test at the end of the second year (the kindergarten year), the mean attainment expressed in grade equivalent scores in reading was 1.5, arithmetic, 2.6, and in spelling, 1.7.

Bereiter believes the issue with preschool education for the disadvantaged is one of studying the task and what it requires versus studying the child and how he functions. He does not believe he is putting an armchair analysis of content against empirical study of children's learning, but rather ordering events which the adult follows in designing programs for young children. His approach would seem to imply following these steps: (1) identifying, on the basis of empirical evidence, the deficits of the sub-group in question, (2) identification of teaching objectives based upon those deficits, (3) analysis of content and operations in order to teach the material directly, (4) empirical field trial and testing, and (5) feedback to step (3).

Among the Illinois group, the emphasis has been on teaching operations and the curriculum. To this time, the long term effects of their work have not been evaluated, but the short term gains have been striking. Their contribution to task analysis is particularly impressive and worthy of careful study.

At least two long term intervention studies have been based on a different approach from those which have been reported so far. Blatt and Garfunkel (1965) and Nimnicht (1966) have taken an "emergent" developmental stance and designed their studies on this basis. In each, the objective was to provide an optimal nursery school environment. Each also used the "talking typewriter" or responsive environment as a central instructional device.

Blatt and Garfunkel described their program as "experimental, emergent, child-centered and adhering to the basic principles of any sound preschool program--but over and above this, focused on the intensified development of pre-academic skills." Responsive environment cubicles were available for the children to use if they so desired. Each cubicle contained an electric typewriter, a slide projector, a microphone and amplifier, and a "neutral" booth attendant. The purpose of the booth attendant was to give feedback as the child used the machine. A responsive environment is defined as one which is attuned to the child's exploratory activities, that informs the child immediately about the consequences of his own actions, permits him to make extensive use of his capacity for discovering relations, and is so arranged that the child is likely to make a series of interconnected discoveries about some aspect of the physical, cultural and social world. Thus, this program relied upon the emerging ability and innate curiosity drive to direct the course of the child's development in the preschool program.

The sixty subjects for the study were chosen on the basis of the family's residence in a deprived area characterized by high delinquency rates, school drop-out and failure rates, and low occupational status of parents; parental consent and negative neurological examination. Three groups were constituted by stratified randomization. The first group had a preschool experience with the "responsive environment cubicle" available, the second group had a preschool program without a responsive environmental unit available, and the third group did not participate in an organized program.

A number of evaluative instruments were used in assessing the effects of the program; however, the research hypothesis that the two year intervention would enhance the demonstrated educability of the experimental children when compared to the control group was rejected. The investigators concluded that the failure of the intervention as an effective force was in part a failure of the instruments to differentiate, and an inability to maintain a true experimental design.

Another study now in progress (Nimnicht, et. al., 1965), a program similar to that of Blatt and Garfunkel's, reports significant increases on the PPVT after a year of intervention with Spanish-American children, but no significant differences on the Binet. While these two bits of research evidence are hardly enough to make a case, it is legitimate to question the validity of the developmental concept of emergence as a viable position on which to base intervention techniques and procedures.

Increasingly, investigators are concerned with the sustaining motivations necessary for continued skill development and maintenance. This has led to broadening the intervention front to the parents of deprived children (Klaus and Gray, 1967; Miller, 1967), and extending the intervention downward to infancy and involving the mother (Gordon, 1967).

In the laboratory at Peabody, work has been going on for two years simultaneously with disadvantaged preschoolers and their mothers, implementing a program which in basic rationale is similar to the model suggested by Guerney, Stover and Andronico (1967). They suggest that the involvement of lower-class parents in a program to improve their child's academic incentives should include: (1) an emphasis on positive reinforcement for achievement, (2) a very practical and action oriented teaching approach which demonstrates crucial behavioral effects on the child, (3) specific assignments to be carried out individually and privately with one child for ten or fifteen minutes daily, (4) the parent keeping records of successes and difficulties encountered for later group discussion with adult peers, and (5) group meetings to be held in the school to overcome negative attitudes held by underprivileged adults about school. I would add, the program should include practical skill training for the parent to make it easier for her to cope with daily demands and to sustain parental motivations.

In an interesting exploratory and demonstration project with infants and their mothers, Gordon (1967) has sought to break into the deprived cycle by training parent educators, adults selected from the population to be served, to work with mothers and their new-born infants in a stimulation program. Gordon sees the mother as being disadvantaged in skills as well as didactic objects. The purpose of this project was to select, intensively train and evaluate the performance of home educators selected from the population they would serve, to develop a series of training procedures based upon developmental evidence that could be communicated and that mothers could implement, to design stimulating toys and objects which could be made from materials on hand or easily available to the disadvantaged family, and to evaluate the effectiveness of the procedures on the cognitive development of the child.

Fifteen parent educators were recruited and given an intensive training program in demonstrating and explaining the use and function of a series of graded exercises for infants.

A wide geographic area of northern Florida constituted the focal point of the research. Towns and their surrounding rural areas were randomly assigned as experimental or control towns, and then randomly assigned as Negro or Caucasian towns. Thus a given town became experimental for one race, control for the other. Subject residence then determined group assignment. Upon birth of the infant, if he met economic criteria for selection with no abnormal birth history, the child was assigned to a group and parent cooperation was solicited.

A series of stimulation materials, developed in booklet form, became the basic training manual for the mothers. The exercises were devised to instruct and modify experience rather than to measure developmental status. Exercises were placed in developmental sequence on an *a priori* basis, using age graded developmental norms as a guide. An attempt was made to maintain a weekly visitation schedule by the home educator to demonstrate the procedures to the mother. The mother was encouraged to interact with the child *ad lib*, which appeared to be a difficult concept for these mothers to understand.

Results were evaluated on the basis of Griffith's scales, and a significant difference in favor of the experimental group was obtained on total IQ. Sub-test scores were all in the predicted direction, with eye-hand quotient and hearing-speech quotient showing the greatest differences. The gains reflect a maximum of twelve hours instruction of the mothers. A number of differences were found on the series items at six months, which were interpreted as suggestive for further research effort.

Gordon continues to follow this line of investigation on a longitudinal basis. He has taken into consideration both the objective and effective environment in planning his intervention. His preliminary results suggest that teaching mothers stimulating skills for their infants in the home is a promising innovation.

Critique

We must admit in all candor a review of intervention research results leaves us with a spirit of cautious optimism. Enthusiasm runs high to do something--almost anything--for young disadvantaged children. However, the mass crash programs have failed to produce evidence of their effectiveness. Part of the difficulty is the service priority and lack of adequate planning time for sound evaluation. A more serious problem is the traditional emergent philosophy, which undergirds most programs. There is little or no evidence to support such a theoretical stance, nor is there evidence to support practices based on this theory. It may take as long to get over the cure as it did to recognize the disorder.

The available intervention research findings indicate that short term gains can be made on specific behaviors where the intervention is directly related to such behaviors. At the simplest level, gains have been obtained with infant psychomotor abilities as well as the more complex cognitive abilities of the preschool and school age child. The effects of short term change in limited domains upon complex behaviors has not yet been established.

Under conditions of massive environmental change, striking and massive improvement can be obtained in abilities associated with adult social competence. Radical environmental manipulation has been shown to affect intellectual functioning, educational attainment, economic productivity, and family stability.

Intervention effort which lies somewhere between these extremes is too new to have the long term effects adequately assessed. With varying degrees of confidence, research evidence suggests that early intervention at a preschool level has marked short term effect upon children. Sizeable initial changes in intellectual functioning have been recorded. These gains are superior to those obtained by comparison samples. Comparison groups usually obtain significant gains upon entering school, but they are not of equal magnitude to those obtained by the intervention groups. There is some evidence showing generalized effects of early intervention to later school achievement. Where such results are observed, parental involvement is usually a part of the intervention program.

Implicit in much of the research which has been reviewed are the beginning steps to identify the dimensions of the objective and effective environments in isolation and interaction which are necessary and sufficient for development of competence. While the stimulating objective environment could be described at length, I would order the priorities in favor of dealing with the stimulating effective environment first, since this has had so little attention. The most important aspect of the stimulating effective environment is the behavior of the effective environmental agent who interacts with the child and mediates between the child and the objective environment.

The following outline is suggestive of the minimum behavioral requirements for an effective environmental agent.

(1) An effective environmental agent provides a rich verbal climate, describing events and their relationships and encouraging a high level of verbal productivity and interaction.

(2) The effective agent provides direct mediation between the objective environment and the child by

  (a) ordering the physical and spatial environment by monitoring and directing attention to the relevant dimensions of the stimulus-informational input.

  (b) ordering the temporal environment by monitoring and directing attention to the sequence of environmental events.

  (c) ordering tasks sequentially in magnitudes of just manageable difficulty to insure successful accomplishment.

  (d) providing an appropriate response model which the child can emulate and imitate in a variety of environmental contexts.

(3) The effective environmental agent provides motivational support by

  (a) creating a reality oriented emotional attachment which matures from dependency to active, involved encouragement of independence.

  (b) using a range of reinforcing techniques which are appropriate to the task. Reinforcement should move

> from the concrete to the abstract and from the extrinsic to the intrinsic.

These appear to be a set of minimum behaviors to provide a stimulating, effective environment. Such a model may move us somewhat beyond the description of "warm, affectionate adults", and lead to productive hypotheses and development.

The state of intervention research has not yet reached the stage where tests of the most efficient intervention treatments are appropriate. Yet there is a great hue and cry for testing Montesori approaches versus Bereiter approaches. Testing of such questions seems not only premature but wasteful, when we have not yet answered the vital question of what variables are related to productive change.

Since intervention research occurs in a field setting, it is difficult, if not impossible, to maintain optimal management of the variables which can introduce a systematic error. Intervention research has been described as dirty research, not without just cause. There is hardly a point in the research strategy which is not vulnerable to the introduction of unforeseen, unwanted and uncontrollable error. The problems have been well-documented by active investigators in the field. (See Blatt and Garfunkel, 1965; Klaus and Gray, 1967; Hodges, McCandless and Spicker, 1967).

The practical and earthy problems of intervention research are seldom discussed in writing. Yet they exist and may contribute more than we would like to admit to the relative scarcity of longitudinal intervention effort. Field research is costly, not only in money, but in time and staff commitment. It requires a tenacity which internal and external pressures can quickly erode. The lure of the quick, clean and publishable can measure the metal of the man. The need for intervention of a longitudinal nature, however, is apparent. Encouragement should be given to young, creative talent to pursue this line of endeavor.

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APPENDIX B

Summaries of Selected Pre-Primary Educational Programs

1960-1970

Program Title: Clarifying Education Environments

Principal Investigators or Developers:

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Alan Ross Anderson
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Source:

Moore, O. & Anderson, A. Some Principles for the Design of Clarifying Educational Environments, Handbook of Socialization Theory and Research, (Ed.) David Goslin. Preprint LRDC, 1968.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

"Clarifying environments" have applicability to all age levels, even the very young.

Whether the child comes from a disadvantaged background is not particularly relevant to the operation of the program. The structure of the program compensates for any deficiencies in this area, in that it provides the child an environment in which he clearly understands what he is doing, and more generally what is going on.

The goal of the program is developmental in nature. Each child will come to acquire increasingly more sophisticated skills and techniques as he is ready for them and only then.

Concepts are built up guided by the child's own decisions. He is an active participant in what he learns and when. The learning that takes place embraces both cognitive and social skills.

It involves a total environment wherein the individual becomes socialized through the learning process. Cognitive learning takes place as the individual acquires his "social self."

Theoretically, these "environments" are designed for use over a period of years.

b. Data Oriented Rationale

Technological development since 1940 has brought about a transition from a "performance" society to a "learning" society--from one where skills learned in childhood can be practiced in adulthood to one where occupations are fundamentally transformed several times in one lifetime.

This shift requires a transformation of our educational institutions--their administration, curricula, and methods of instruction.

Education must first develop a flexible set of highly abstract conceptual tools, ranging over the physical, biological, behavioral and social sciences.

Only symbolic skills that are highly abstract and general are useful in coping with radical change.

Folk models give a child his view of the world; thus, we need new and dynamic models appropriate for these changed and changing conditions.

c. Developmental theory

The program is based on the work of George Herbert Mead, the father of the Symbolic interactionist position in social psychology, and Georg Simmel, the originator of the school of Formal Sociology.

It was the belief of the designers of this program that the ideas of these two men could be applied toward the development of productive educational environments.

Work of Simmel brought forth the notion that the contents of everyday life are somehow abstracted from the stream of living and reappear as the play forms of sociability. In his words, "Actual forces, needs, impulses of life produce the forms of our behavior that are suitable for play (p. 7)." ". . . people actually 'play' 'society' (p. 7)."

Mead provided insight into the structure of human personality when he evolved the concept of the "significant other" and the "generalized other," in which the individual is regarded in terms of his interaction with the environment and also his position as one who is able to oversee the total interaction from a judge's or referee's standpoint. A socialized human begin is able to take not only the perspective of agent and patient in society, but also a reciprocal perspective and that of referee. Thus, the social self emerges out of a combination of social processes and which can, in turn, affect these same processes.

Expanding on the ideas of these two men, Moore and Anderson developed a theory of man's relation to his environment.

Early in human history, man created models of the most important features of their relations with the environment. Relations between:

1. Man and nature.
2. Man and random elements in experience.
3. Man and his interactional relations with others like himself.
4. Man and normative aspects of group living.

All societies have cultural objects falling within these four categories, which Moore and Anderson call "folk models." Correspondingly, every society has, according to John von Neumann:

1. Puzzles.
2. Games chance.
3. Games of strategy.
4. Aesthetic entities.

Aesthetic entities are art forms which allow people opportunity to make normative judgments about an evaluation of their experience.

All societies make use of these models in socializing the children and for the recreational enjoyment of the old.

Mathematical research into structure of folk models demonstrates early man quite intelligent to be able to invent them--but even children can begin to play with most of them.

Moore and Anderson believe these folk models are learned, but not taught. What is taught are the "rules of the game," and once rules understood, each participant largely on own.

Every society has social norms which regulate the use of the folk models; these norms allow the folk models to contain their own goals and sources of motivation, i.e., to become "autotelic."

Even though models are of serious matters, they must be treated as playful activities. (This is an extension of Simmel's basic program for formal sociology.)

Moore and Anderson's folk models and Simmel's play forms combine to help in analyzing structure of human personality.

Authors assume that functional components of human personality, and organization of these components, reflect structure of folk models.

They theorize that each of four kinds of folk models corresponds to a characteristic attitude or perspective that a person might take toward his world.

1. Puzzles emphasize sense of agency.
2. Games of chance emphasize sense of patienthood, i.e., being recipient of consequences over which have no control.
3. Games of strategy emphasize "reciprocal perspective"; here, a person views others as individuals who are capable of looking at him as he looks at them.
4. Aesthetic entities emphasize a sense of assessing, evaluating, or judging; this perspective presupposes entities that react according to the other three perspectives; called called "referee's perspective."

A socialized human being should be able to take any of the four perspectives, and in any combination.

Individual's social self (in sense of Mead) is made up, in part, by the organization of these perspectives.

Acquiring a social self is a matter of learning, guided (in authors' opinion) by autotelic folk models.

There are four parts of a socialized human being: agent, patient, reciprocator, and referee.

Authors theorize that these four perspectives constitute a subsystem which acts as part of an overall control system governing information processing.

Ongoing human activity, as Mean saw it, contains its own control system.

Authors put forth a control system that is reflexive enough to allow a human being to step back and view himself as an object, and to allow him to see himself from a standpoint of any of the perspectives while he is planning or executing actions.

The learning of these perspectives follows an ordered sequence (as in Mead's theory): first, the agent and patient perspectives; second, the reciprocal persepctives; and third, the referee perspectives.

Role of feeling and emotion:

1. Each perspective connects to system of feeling and emotion; control system reacts to system of feeling and emotion when plans are being considered or executed or during actual activities.
2. Scale of feeling and emotion can be changed without necessarily altering its relative proportions.
3. Each individual can learn about his own feelings and emotions; they can be "schooled."

d. Instructional theory

Based on folk models and on fact that we live in a changing world.

Four principles for designing educational environments:

1. Perspectives Principle. Good learning environment permits and encourages the taking of more perspectives toward what is being learned.
2. Autotelic Principle. Good learning environment provides activities that have their own goals and sources of motivation.
3. Productive Principle. Good learning environment provides material to be learned which is productive.
4. Personalization Principle. A good learning environment is more responsive to learner's activities and allows and encourages learner to take more reflexive view of himself as a learner.

Discussion

1. Perspectives Principle. Good learning environment allows a learner to start off with whatever perspective he brings to it and then allows him to shift at will.

   Young children do not have short "attention spans," but rather relatively short and unstable "perspective spans."

   A wide variety of perspectives is more conducive to learning than merely putting child in position of patient to the acts of agency of the teacher.

2. Autotelic Principle. Learning environment should be free from physical, psychological, and social risks.

   Best way to learn difficult things is to be placed in an environment in which one can try things out without fear of being wrong.

   But--there should a time for playfulness and time for earnest efforts with real risks.

3. Productive Principle. To be "productive" a cultural object must permit learner either to deduce things about it (after partial presentation) or make probable inferences about it.

   The most productive version of something to be learned should always be chosen in order to free learner to reason things out himself and not rely on other authorities.

   Folk models are good examples of productive cultural objects.

4. Personalization Principle.

   a. A responsive environment encourages learner to find a question, then find an answer.

      Learner can explore freely, thus allowing him to discover a problem.

It tells learner immediately about consequences of actions.

It is self-pacing, i.e., events happen when learner determines them to.

It allows learner to discover relations of various kinds.

It encourages learner to make series of related discoveries about physical, cultural, or social world.

Therefore, responsive environment will promote making fresh deductions and inductions rather than having things explained didactically.

It will encourage learner to make discoveries by changing "rules of the game" (without learner knowing at first) so as to create problems that are meaningful for him.

b. A reflexive environment makes it easier for learner to see himself as a social object.

Future learning can be made easier if environment permits learner not only to learn whatever is to be learned but also to learn about himself as a learner--to see his learning career retrospectively and prospectively.

II. Instructional System

a. Performance objectives

In general, acquisition of complex skills, in reading, math, science, etc.

Development of communication skills and ability to relate them to each other--reading, writing, listening, and speaking.

b. Instructional organization

Instruction is organized on the basis of carefully structured environments within which the child is free to explore and develop at his own rate.

Learning is cumulative but always personalized so that the learner comes to acquire an historical knowledge of himself as develops over time; he will see himself developmentally.

The child progresses on the basis of his discoveries about the environment and himself.

His learning is the result of the cumulative effect of series of related experiences over which he has control.

c. Instructional content

Basic communication skills: reading/writing and listening/speaking.

d. Instructional methods and techniques

Taking dictation (taped and verbal).

Publishing newspapers.

Oral discussions (interplay of ideas).

Free exploration of learner.

Private play periods.

Definite learning environments for individuals and groups.

Explanation of rules of environment by other children to children.

Freedom to come and go without explanation.

Behaviors of learner is regarded by staff as private matter.

Parents are not allowed to watch their children or receive reports about child's progress.

Children are not graded.

Half-way stations called "transfer rooms" provide a transitional environment between the autotelic environment and the world outside; skills learned are practiced within a context of a larger task.

Rules in transfer room are permissive in nature (rather than autotelic).

These rooms allows for the "transfer" of what is learned within an autotelic environment to problems outside.

Staff does not take nonautotelic roles outside environment.

Use of "talking typewriter," a machine which has the following capabilities:*

1. Permits learner to explore freely the English orthographic system.
2. Audio reproductions of written words quickly.
3. Storage of written and oral language.
4. Contains a full keyboard all letters, upper and lower case and punctuation marks.
5. Blocking of keyboard after one word typed out.
6. Self-pacing device to slow down, speed-up, and repeat sequences and also to enable scanning ahead.
7. Three lighted keys to indicate upper case, lower case, and space bar when necessary.
8. Color coded fingers to match color coding of keys.
9. A set of remote controls which can present learner new problems without interruption.

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*Equipment which embodies its own techniques.

10. Sequential presentation (controlled remotely) of a series of interconnected language games.

Sound-color motion picture photography of children in learning activities to be viewed by them afterwards.

e. Instructional materials

Carefully chosen on basis of what is to be learned and how this learning should take place.

The "talking typewriter" developed by Omar K. Moore and Richard Kobler.

Any devices developed by modern technology which are guided by the four principles for clarifying educational environments.

Therefore, the "talking typewriter" and any other devices based on these principles form an integral part of the total program.

III. Delivery System

a. Organization of the learning environment

Learning takes place in specially designed laboratories (indoors).

Can use air-conditioned, windowless, prefabricated buildings forming shells for environments, or existing structures.

Inside

Aim is to delineate clearly the protective boundary of the environment so that even very young children will be able to distinguish between being in it and being out of it; distinction is sometimes emphasized through the use of different colors, textures, temperatures, etc.

Therefore, compartmentalization is used; there are soundproofed booths for individuals and larger rooms for groups.

Children are free to come and go as they wish (no questions asked).

They may talk about what they do to members of the staff if they choose.

Parents play no role in learning environments (no observation and no reports).

After skills are acquired, children may go to "transfer room" to apply them to larger tasks.

b. Pre-service and in-service training procedures and materials

No data available.

IV. Evaluation System

No data available.

Foundations of program have been utilized by other designers who have included evaluative components.

V. References

Moore, O. & Anderson, A. Some principles for the design of clarifying educational environments. University of Pittsburgh: Learning Research and Development Center.

Program Title: The New Nursery
(1964-1967)

Principal Investigators or Developers:

Glen Nimnicht
John Meier
Oralie McAfee

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Sources:

Nimnicht, G., Meier, J., and McAffee, O. Research on the New Nursery; Part I: A summary of the evaluation of the experimental program for deprived children at the New Nursery School using some experimental measures. December, 1967. Educational Resources Information Center, Document Number ED 027 076.

Nimnicht, G. Research on the New Nursery School; Part II: A report on the use of typewriters and related equipment with three- and four-year-old children at the New Nursery School. December, 1967. Educational Resources Information Center, Document Number ED 027 077.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Set up to help three- and four-year-old Spanish-surnamed environmentally deprived children.

Children have a different culture and language.

Goals--To

1. develop a positive self-image.
2. increase sensory and perceptual acuity.
3. improve language ability.
4. improve problem-solving and concept formation abilities.

Program lasts three hours a day, for a regular school year (one hundred and seventy days).

b. Data oriented rationale

Studies and research show that environmentally deprived children have not developed a positive self-image, sensory and perceptual acuity, language proficiency, and problem-solving and concept formation abilities.

Lack of development in these areas logically seems related to deficiencies in environment.

c. Developmental theory

No data available.

d. Instructional theory

Instruction based on O. K. Moore's "autotelic responsive environment".

"Autotelic"-- activity done for its own sake rather than for obtaining rewards or avoiding punishment.

Conditions of "responsive environment"

1. Learner can explore freely.
2. Learner knows immediately the consequences of his actions.
3. Self-pacing.
4. Learner can make full use of his capacity for discovering relations.
5. Learner will be able to make a series of interconnected discoveries about physical, cultural or social world.

Child does something because he wants to.

Choices open to child controlled by what is contained in "environment".

Child should be free to spend as much time as he wants on an activity.

II. Instructional System

a. Performance objectives

1. Affective
   a. Improved self-image
2. Cognitive
   a. Increased perceptual acuity
   b. Improved language ability

c. Improved problem-solving and concept formation skills

b. Instructional organization

Instruction is organized around creating an "environment" that allows child to freely explore and discover on his own.

There is no specific content, as such. What experiences child has are a result of his own actions and thus are unique.

Instruction is organized to the extent that specific materials and activities are included by program directors in the "learning environment." Beyond this, there is no specific instructional organization.

c. Instructional content

Most of child's day (three hours) is spent in self-directed activities such as painting, working puzzles, looking at books, dressing up, building with blocks, etc.

Group activities include singing, listening to a story, and participating in a planned lesson.

Using typewriters in individual booths, child learns letters and eventually words; later, he is able to type out his own stories; in this way, child's language is developed, and mental processes enhanced.

What the child learns is a result of his own exploration and discovery.

d. Instructional methods and techniques

Adult-initiated conversation is discouraged and child-initiated conversation is encouraged.

Child is never asked if he wants to be read to but always read to when he asks to be read to.

Teachers avoid asking a child to give up one activity to do something else.

Teachers never insist that any child come to a group activity.

Typewriters in individual booths are used to allow children to discover letter-sound relationships and words; later, child will dictate stories to booth assistant to type; finally, child will transcribe own stories.

Use of typewriter governed by child's free exploration.

Assistant responds when asked questions.

Assistant demonstrates features occasionally but does not tell child to perform in any particular way.

Conversation is acceptable during use of typewriter.

A game-oriented approach is often used.

Questions asked by teachers and assistants are geared toward eliciting responses from child that indicate his interests and desires.

e. Instructional materials

"Responsive environment" determines kind of equipment used, way it is used, and behavior of teacher and assistants.

Learner informed by self-correcting toys, machines, other children, or teacher.

Most toys are self-correcting

  nesting and stacking toys
  puzzles
  concentric circles, squares, rectangles
  etc.

Bell and Howell Language Master

Teachers and assistants also act as materials, in a sense. They respond to child as he encounters and manipulates surroundings. They do not teach; they facilitate children's learning.

Important features

Typewriters in individual booths

Magnetic chalkboards

Rolls of paper containing upper and lower case letters

Alphabet cards

III. Delivery System

a. Organization of learning environment

Similar to O. K. Moore's "clarifying educational environments."

Areas set aside for group activities and for individual work.

Thirty children in class, divided into two groups of fifteen each.

b. Pre-service and in-service procedures and materials

No data available.

IV. Evaluation System

a. Evaluation instruments and procedures

Sample

1964-65	30
1965-66	30
1966-67	50

Design

Pre- and post-tests were administered over a three-year period to children in the New Nursery School (NNS) using Stanford-Binet and the Peabody Picture Vocabulary Test.

Starting the second year (1965-66) the Responsive Environment Nursery School (REN School) was begun for middle-class children whose parents could afford it; same program was used, including same procedures as in NNS.

Comparison groups are selected (having same background as NNS children) when NNS enter kindergarten and first grade.

S-B used to test comparison groups at beginning of year.

Daily reports were made of NNS and REN children of their activities.

Thus, evaluation was based on pretests and post-tests of NNS children, on comparisons with middle-class children who also use the school, and on comparison in kindergarten and first grade with children from similar backgrounds.

Tests were selected or developed to measure program effects.

Tests

1. Self-Image

Brown-IDS Self-Concept Referents Test involves showing child several pictures of himself and others and asking him a series of questions about the people.

2. Perceptual Acuity

A part of teaching process; no special tests used.

Language Master used to test ability to identify and name colors.

Many of activities involved in developing senses and perception are part of language development and concept formation and can be evaluated in that context.

3. Language Acuity

   Metropolitan Reading Readiness Test (MRRT)

4. Concept Formation and Problem-Solving Ability

   Cincinnati Autonomy Test Battery (CATB), selected portions (Thomas J. Banta, University of Cincinnati).

   The "C" Test, a test of child's ability to relate objects that can be placed in same classification.

   Children's Categories Test, a test of child's ability to discover a category.

   All three tests in experimental stage as of December, 1967.

Other tests used

The Pre-School Inventory (Bettye Caldwell and Donald Soule). In development stage. Tests concept formation ability, personal-social responsiveness, and language ability.

b. Research and technical support data

1. Self-image

   Comparisons between first grade children who attended NNS and a comparable group.

   a. NNS children had fewer negative responses about themselves than other group.

   b. Tentative conclusion is that NNS program helps children develop a better self-concept in relationship to school experience.

   c. Brown-IDS test not adequate.

2. Perceptual Acuity

By the end of second year, NNS children could name all the colors, but REN children could name almost all colors at beginning.

Test using Language Master not adequate measure.

3. Language Ability

Results of MRRT administered to kindergarten children (1967).

Mean score of NNS children = 79 (percentile = 70th)

Mean score for controls = 64 (percentile = 35th)

On basis of IQ scores at beginning of 1966-67 school year, NNS children scored considerably better than one would predict.

	I. Q.	MRRT (%)
NNS	94	70th
C	84	35th

Tentative conclusion

NNS did improve language ability as measured by MRRT taken at end of kindergarten.

4. Problem-Solving Ability and Concept Formation

All the tests used are in early stages of development and thus of limited value at present.

Main value--provide variety of ways to compare NNS and REN children.

REN children did consistently better than NNS children
REN four-year-olds score better than REN three-year-olds
REN three-year-olds score better than NNS four-year-olds

Tentative conclusions

1. More research needed to determine significance of test results, its relationship to program of NNS and relationship to school success.

2. At four years of age, deprived children are already a year behind in concept formation and problem-solving ability.

3. Four-year-olds attending NNS for second year are responding more like REN four-year-old children and better than NNS four-year-olds in their first year; and the latter respond better than NNS three-year-olds. Appears NNS is achieving some of its objectives. Considering lower IQ's of NNS children, results are encouraging.

4. REN four-year-olds in second year tend to score higher than REN four-year-olds in first year. Thus, program is also effective fo. non-deprived children.

5. Continued experimentation is required with all new tests.

Success in School-- Follow-up of children who attended school during 1964-65 and 1965-66.

Kindergarten-- Teacher evaluations at end of fifth week. Out of twelve NNS children, eight would do average work, two were above average, and two would probably have difficulty.

Since kindergartens were composed mostly of middle-class children, results seem encouraging.

Another evaluation made of same children in first grade.

When compared with children in control group, two groups were not significantly different.

Appears effects of NNS disappear by middle of first grade.

However, results (as of December, 1967) are inconclusive.

Encouraging indication is that none of NNS graduates (as of December, 1967) repeated a grade or been recommended for special education for mentally retarded, especially when one considers their initial low IQ scores.

Typewriter Booths

1. There is a relationship between the number of times children go to booths, the amount of time they spend and achievement in the booth. There is also a relationship between age and booth achievement, and IQ scores and booth achievement.

2. Booth experience seems to be of little worth for three-year-old deprived children; may be that it is more effective with older children or with four-year-olds having average or better IQ scores.

V. References

Nimnicht, G., Meier, J., and McAfee, O. Research on the New Nursery; Part I: A summary of the evaluation of the experimental program for deprived children at the New Nursery School using some experimental measures. December, 1967. Educational Resources Information Center, Document Number ED 027 076.

Nimnicht, G. Research on the New Nursery School; Part II: A report on the use of typewriters and related equipment with three- and four-year-old children at the New Nursery School. December, 1967. Educational Resources Information Center, Document Number ED 027 077.

Program Title: Tutorial Language Program

Program Investigators or Developers:

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Sources:

Blank, M. & Solomon, F. A tutorial language program to develop abstract thinking in socially disadvantaged preschool children. *Child Development*, 1968, *39*, 379-389.

Blank, M. & Solomon, F. How shall the disadvantaged child be taught. *Child Development*, 1969, *40*, 47-61.

Blank, M. A methodology for fostering abstract thinking in deprived children. Paper presented at the conference on the "Problems in the Teaching of Young Children," Toronto, Ontario, March, 1968.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Designed for three- and four-year-olds.

Deprived child has cognitive, affective, motivational and social deficits.

This program offers an alternative to most compensatory programs that are designed as enrichment oriented.

While enrichment is valuable, it does not diagnose key deficits of deprived child.

Program built on assumption that mere exposure to previously absent stimuli is not sufficient for learning.

For learning to occur, child must be actively involved with the stimuli; active involvement refers to the internal mental manipulation of experience, using abilities such as organizing one's thoughts, reflecting on situations, comprehending the meaning of events, and structuring behavior in order to be able to choose among alternatives.

Goal of program is to develop abstract thinking--an internal symbolic system; this can best be achieved through the development of abstract language.

The use of abstract language is common in the middle-class home, but it is absent in the lower-class home.

Thus, it is the lack of an ongoing, elaborated dialogue which is the major experiential deficit of the deprived child.

These children will develop a firm language base for thinking only if they are given consistent guidance.

Thus, the most effective teaching is based on individual tutoring.

Program involves daily sessions of about fifteen to twenty minutes (one and one-half hours per week).

Program lasted for four months.

b. Data oriented rationale.

Research by Blank and Bridger leads to conclusion that the failure to develop an abstract attitude is major deficiency of deprived children. Their behavior reflects the lack of a symbolic system by which to organize the stimulation surrounding them.

Vygotsky has outlined the nature of abstract language.

Feedback from parent to child involving abstract language is not present in disadvantaged child's home according to Freeberg and Payne.

Berstein has determined that this lack of ongoing dialogue is the major deficit of the deprived child.

Bereiter and Engelmann, Deutsch, and Gray and Klaus have attempted to compensate for this language deficit through group situations.

Question is whether group situations can take the place of the one-to-one stiuation which the middle-class child learns abstract language.

Most educators express commitment to the ideal of the one-to-one relationship; language-deficient groups, such as deaf children, are almost always instructed taught under such conditions.

Consideration thus needs to be given to the possible effectiveness of short periods of daily individual instruction.

Moreover, young children normally have shorter attention spans suggesting that frequent reinforcement of new skills would be highly effective.

In general, the research of the designers of this program indicates that high-level language skills are central to the development of abstract thinking (Blank, et al.).

Even at the preschool level, there are tasks for which abstract language is the only means of solution.

It is too risky to hope that the "fallout" from a perceptually enriched environment will encourage the formation of what is the central core of intelligence.

c. Developmental theory

Implicit in the techniques used in this program, is the theory that children develop cognitively as a result of interaction with the environment in an organized way; this development occurs in stages that move from the concrete to the abstract.

The acquisition of abstract thinking is fostered through stimulation of verbal interchange.

It is through active involvement with the environment that cognitive growth occurs.

Language is the most important factor for promoting symbolic thinking.

Lack of experiences with language in early childhood hinders intellectual development.

Cognitive growth can be accelerated and need not wait until the child is "ready."

It is possible to actively stimulate the child to higher levels of thought. (Maturation is not the sole determinant.)

d. Instructional theory

From the results of research, this program operates on the theory that effective instruction is based on individual tutoring.

Child should not be permitted to leave a task unfinished, to prevent any resistance from becoming established.

Young children have short attention spans and thus need brief but frequent reinforcement of new skills (five days per week, fifteen to twenty minutes per day).

New language skills enable the child to cope more effectively with the demands of his environment; thus, child will be able to improve in his social interaction.

What the child needs is not simply more and better words, but they need to use the language they already have, as well as new words they learn, to structure and guide their thinking.

Child learns how to think effectively in an environment of self-discovery.

II. Instructional System

a. Performance objectives

To increase level of thinking to deal abstractly with the environment.

Goal was to foster abstract thinking so that child could cope with cognitive material offered in group situations.

This increase should be reflected in higher Stanford-Binet IQ scores.

b. Instructional organization

Program based on one-to-one tutorial sessions (about fifteen minutes long) which the teacher, through Socratic dialogue, provides the child with a variety of experiences designed to make child question, probe, and investigate.

c. Instructional content

Program consists of language instruction which moves from the concrete to the abstract.

Instruction involved the development of the following abilities:

1. Selective attention
2. Reduction of visual dominance
3. Reduction of egocentric perspective
4. Recognition of significant characteristics of objects and events

5. Recognition of the tangential from the germane
6. Rationale for observations and behavior
7. Awareness of learning; its components and complexity
8. Development of verbal concepts
9. Categories of exclusion
10. Relation of the word to its referent
11. Relevant inner verbalization
12. Development of a coding or translational process
13. Awareness of possessing language
14. Development of memory
15. Models for cause-effect learning
16. Imagery of future events
17. Validation of verbal statements
18. Recognition of the incorrect
19. Flexibility in thinking
20. Selection of alternatives
21. Development of sequential ordering
22. Development of problem solving strategy
23. Deductive and inductive reasoning
24. Ability to employ sustained sequential thinking
25. Ability to sustain independent work

It is not concepts themselves which are taught, but the processes used in acquiring these concepts.

d. Instructional methods and techniques

Tutorial sessions used the Socratic dialogue approach (rather than didactic teaching).

A variety of methods were used, each one designed to overcome a particular deficiency.

With all the methods, the child was confronted with situations in which the teacher used no gestures; to accomplish the task correctly, the child had to understand and/or use language.

Child was lead to produce an independent response relevant to a situation created by the teacher and to extend the situation set forth by her.

Child required to discuss situations which did not exist in front of him at the moment but which were relevant to the present situations.

Teacher made maximum use of every opportunity to help child in developing his ability to think and reflect.

This approach is in contrast to the practice of giving a massive dosage that will somehow hit the individual deficiencies.

Specific techniques:

Cognitively Directed Perception

Selective attention--Child is required to compare objects and make choices among them to teach him to recognize essential elements and ignore unimportant stimuli.

Reduction of visual dominance--Many non-visual stimuli are experienced without awareness; visual stimuli, however, enhance the impulsivity of the child.

To facilitate learning (perceptual), tasks are given to the child which diminish the attraction of the visual sphere. For example, the child might be asked to focus on the sound and touch properties of objects, without any visual clues (such as which felt rougher, sandpaper or tinfoil?).

Reduction of egocentric perspective--In order o help child achieve a "psychological distance" between himself and the material, role playing is a useful technique; the major aim is a cognitive one where the child adopts and maintains a set which determines the responses appropriate to his role.

Recognition of significant characteristics of objects and events--Questioning based on intellectual curiosity is desired.

Child should be led to an internal realization that something needs investigating.

Child should be led to question the qualities of the commonplace. (For example, why are boots worn in the winter?.)

(Example--difference between things that write and don't write.)

Recognition of the tangential from the germane--To help child overcome tendency to note all elements in a situation as having equal significance, adult can use (for example) the motivation of characters in a story in analyzing it (e.g., "Why did the bird leave the nest?").

He should also be led to focus more discerningly on the relevant features in his own environment (e.g., "Was it necessary to wear a coat today?").

Rationale for observations and behavior--Child's perception is often limited by failure to isolate components responsible for the perception; this skill lays the groundwork for primitive deduction.

To foster this ability, adult can focus on properties having some personal relevance for child, such as emotional states, facial features associated with these, bodily states, affective qualities; then questions can be extended beyond the child's immediate person.

Awareness of learning: Its components and complexity--Child must take active role in learning.

One method is to have child assume the role of the teacher to another child.

Verbalizing ideas to another is a learning experience

Requires careful guidance from adult teacher--child should be given material to teach that has built-in sequences, (e.g., a story to read, teaching a song, projects with a unifying theme, teaching a game).

The Coding Process

Development of Verbal Concepts

Concepts were taught that were deemed beneficial in developing abstract thinking.

Types of concepts:

1. Physical properties such as number, speed, direction, temperature, emotions. They were taught through many graphic illustrations; examples in which the concept did not appear were used for contrast; labels were given in negative form such as "this is a cup, this is not a cup". Simultaneous teaching of two or more labels was avoided.
2. Multiple concepts were taught to help child handle several concepts simultaneously, e.g., "draw a long red line."
3. Temporal concepts require a language system in order to develop fully; temporal stimuli can be used to train children in language based concepts.
4. Linkage concepts-- the connection between interdependent objects or actions, e.g., eye and seeing.
5. Definition through function, e.g., "what you lie down on if you were tired?"

Categories of exclusion--Child is asked to make decisions within the confines set by the teacher; directions are explicitly stated so the child knows what is to be excluded.

Separation of the word from its referent--Child might be given a command which he must repeat aloud before acting out the command; he will learn to separate the word from the object or action it represents and thus be able to generalize the meaning of words beyond the particular contexts in which he hears them.

Relevant inner verbalization--Child required to use language silently and then express it upon request; this trains him to develop inner verbalization by retaining words as substitutes for objects; he will eventually use words voluntarily without external demands.

Development of a coding process--
Here, use is made of non-verbalized forms of representation such as gestures, in order to help child gain an insight into the coding process. Map drawing is one technique. Games such as charades; also, pictures can be used in this game.

Awareness of possessing language--Because young children are often only passive recipients of instruction, they need help in becoming aware that they independently invoke language to help order their world; child, for example, can be asked to give commands to their teacher.

Problem Solving Abilities

Development of Memory--Child needs ability to internalize material into a meaningful system.

Tasks that can be used:

1. Giving a series of commands that must be retained before they can be acted upon.

2. Display a series of objects, remove one or more without child seeing them and then ask him to name missing objects.

3. Reviewing concepts and events that have occurred in the session.

4. Reviewing material in previous sessions (using relevant items as aids).

5. Helping child select from the past to enable him to generalize to the present.

Models for cause and effect reasonings--Child was led to observe common but not frequently noted phenomena; while his perceptual abilities are high, he needs help in organizing his observations in order to comprehend their significance.

Ability to categorize--Children were taught elementary categories such as food, clothing, transportation, and job functions.

Imagery of future events--Child was required to think through the results of realistically possible but not present courses of action; child was asked to predict outcomes of specific changes in an existing situation.

Validation of verbal statements--Child often gives responses without understanding the meaning of the words.

A technique to use is to help child validate what he says. For example, "How many fingers do you have on one hand?" Here, child must test his answer directly, whether it is right or wrong.

This technique can be extended over time for verification of predictive statements, e.g., "If I put the water in the refrigerator for a long time, how will it feel when I take it out?" This outcome can be validated.

Child is made to constantly question, which helps him to develop a receptive attitude to verbal communication.

Recognition of the incorrect--Validation of verbal statements requires the child to recognize a correct from an incorrect solution; most children deficient in abstraction can't do this. They must know what is appropriate to a situation.

Child can be asked to judge what is best suited for a particular situation ("If you're tired, is it better to sleep or eat?").

Flexibility in thinking--Child must realize that often there is more than one appropriate response in any situation.

Child might be asked how to keep up his overalls when he has lost a button.

Also, the same solution can often be used in different problems (e.g., uses of a step ladder).

An object can function for multiple purposes (e.g., water used for drinking and cooking).

Selection of alternatives--If child has difficulty in answering a problem, a technique is to offer him a choice of several alternatives-- one of which is obviously correct.

Development of sequential ordering--Children need ability to dissect sequences and reflect upon them.

To achieve this skill, it is helpful to use concepts which are sequential such as shading, height, number, and duration (e.g., ask child to order a series of sticks of different lengths).

Visual materials can be used which involve a succession of ideas rather than a single concept (e.g., picture sequences).

Sentences such as "I saw in the sky" can be used.

Development of problem solving strategy--Children have tendency to solve problems by trial and error or simply withdraw.

Child must be aware that alternative courses of actions exist.

For example, "If I gave you 2 boxes--one with marbles and one with feathers, what would you do to find out which material was in which box?"

Deductive and inductive reasoning--Children often fail to reflect upon the implications of actions and events; they are bound to a concrete level of thinking; they require the ability to use the deductive-inductive process of reasoning.

Skills such as memory, categorization, and elimination of irrelevant information are necessary.

Games can be played such as "What Am I?" "Twenty Questions."

Have child determine which characteristic is common to a variety of instances.

Sustained sequential thinking--Words have meaning in the fullest sense only in context of sentences. Child needs to see objects, events, and words as part of an appropriate framework; he needs to be taught to maintain concentration and to determine all the possibilities of a course of action.

All questions asked the child requiring memory were restricted to verifiable events.

Guidelines for Asking Questions

1. Avoid questions that are so common they can be answered with rote responses.
2. Avoid questions to which a vast array of answers can be deemed correct.
3. Avoid questions that cannot be verified.
4. Where possible, avoid giving direct answers to children's questions.
5. Avoid questioning only when the child is wrong.
6. Avoid repeating the same question several times.

e. Instructional materials

Common, inexpensive objects readily available in the child's environment were the only ones used in the teaching (e.g., papers, crayons, blocks, toy cars, simple books).

Materials were used only as points of departure from which the child could discuss increasingly abstract situations which were relevant to the materials.

It was important that the child be supervised while using the materials to avoid aimless, scattered, stimulus-bound activity.

III. Delivery System

a. Organization of learning environment

Each child received individual (one to one) teaching for fifteen to twenty minutes daily, five times per week.

Tutoring involved taking child from his classroom to a familiar room in the school.

All tutoring was conducted by a professional nursery school teacher who was trained in the techniques of this program.

b. Pre-service and in-service procedures and materials

Teachers who did the tutoring were trained in the methods and techniques of the program prior to its inception.

However, the authors are unsure (at present) whether all teachers can be trained in this type of program, what the most effective means of training are, etc.

IV. Evaluation System

a. Evaluation instruments and procedures

Sample

Subjects were selected from a nursery school in a socioecomically deprived area of New York city.

N = 22

All were tested initially on the S-B I Test and the Leiter Scale.

Children ranged in age from three years three months to four years seven months.

Procedure

Children divided into four groups, two tutored and two untutored. They were matched for IQ, age and sex.

Each child in first tutored group received individual teaching for fifteen to twenty minutes daily, five days a week.

Each child in the second tutored group received the same training only three times a week.

Each child in the first untutored group had daily individual sessions with the same teacher, but no attempt was made to tutor the child; child was exposed to identical materials and permitted to engage in any activity of his choice; there was no cognitive interchange. (This group was included to control for possible role of individual attention alone in facilitating intellectual performance.)

Each child in the second untutored group (N - 7) remained in the regular nursery school program with no additional attention.

Treatment lasted four months.

Children were then retested, (by research assistants who did not know to which of the groups the children had been assigned and who had no contact with the children prior to testing period).

b. Research and technical support data

Behavior changes

From withdrawal behavior to active involvement.

From incoherent verbalizations to clear speech.

Motor coordination and physical activities were more organized and socially acceptable.

There was a general diminution of all inappropriate or undesirable behavior.

Even among relatively well-functioning children, improvements were found. For example, the growth from simple labeling to a coordinated, sequential story construction of pictures.

Children showed great joy in learning from being tutored in language development. None of the other children showed such an attitude.

Results

Stanford-Binet

Mean IQ increases in tutored groups. One and 2 were 14.5 and 7.0, respectively.

In untutored groups 1 and 2, the changes were 2.0 and 1.3, respectively.

A Kruskal-Wallis analysis of variance indicated that the changes in the four groups were significantly different ($p. < .05$).

A Mann-Whitney U Test indicated that the rise in the tutored groups was significantly greater than the rise in the untutored groups ($p < .02$)

The gain by the group tutored five times a week was greater than that of the group tutored three times a week (although the difference was not significant).

Results suggest that improvements in performance may be directly correlated to the amount of tutoring per week.

The lack of a clear difference in gain between the two untutored groups indicates that the element of individual attention from an adult without specialized tutoring was not sufficient to achieve the rise in IQ scores.

Leiter Scale

Are in accord with those on the S-B Test.

Tutored groups 1 and 2 showed mean increases of 4.5 and 9.5, respectively.

Untutored groups 1 and 2 showed 5.0 and 1.9, respectively.

The lower gains might be due to the fact that this test does not require verbal abilities.

Untutored children who remained in the classroom showed losses and gains of up to twenty points. Thus, Leiter Scale was not be a reliable test of functioning at this age range.

General Conclusion

Exposure to materials, a school-like situation, and an interested adult is not sufficient for learning.

Mastery and enthusiasm come only when child can be shown how to become actively involved in the learning process.

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Program Title: Learning to Learn Program
A Sequential Learning Program

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Sources:

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PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

The target for this program is culturally deprived preschool children.

Program is based on the mounting evidence which supports the hypothesis that cultural deprivation or an impoverished environmental background leads to slow intellectual development.

The program is based on the theory that cognitive development proceeds through motor-perceptual-symbolic phases.

It is maintained that intellectual, psychological, and social development proceed along an orderly sequence of motor-perceptual-symbolic phases with transitional periods in the developmental pattern.

Thus, the program is specifically geared toward a developmental goal rather than a deficit-filling function.

The curriculum is not designed (as are "traditional" preschool programs) to prepare the child for the first grade, but for learning. In other words, the child must learn how to learn!

Thus, the program departs from many others in that the emphasis is not on emotional-social development and readiness skills.

Disadvantaged children often fail to succeed in school due to the absence of the necessary tools and stimulation at each of the stages of development.

Thus, the main assumption underlying the program is that the slow rate of development manifested by culturally deprived children can be corrected by making use of a planned sequence of environmental stimulation that is based on a knowledge of these phases.

Program emphasizes language as an important tool for thinking and reasoning.

b. Data oriented rationale

Developmental psychologists have long maintained that intellectual, psychological, and social development proceed along an orderly sequence of motor-perceptual-symbolic phases.

Gesell, Hurlock, Havighurst, Piaget, Prescott, Breckenridge and Vincent, and others have written about this sequential development.

Experimental evidence supporting the hypothesis that cultural deprivation or an impoverished environmental background leads to slow intellectual development has been mounting since the early 1930's.

B. L. Wellman became interested in how this slow development of culturally deprived children might be modified. She showed that preschool attendance helped lower socio-economic class retarded children in their intellectual development. In 1945, Wellman reviewed fifty studies of the effects of preschool group learning experience on I. Q. Her review indicated that preschool attendance increased the I. Q. of children by about five or six points when compared to children who did not have this experience.

Similar results were obtained by Skodak and Skeels after studying children who were adopted from culturally deprived homes into middle-class homes.

Over one hundred studies support the hypothesis that cultural deprivation leads to intellectual inferiority, that intelligence can be increased by introducing environmental enrichment, and that exposure to a more middle-class environment improves intellectual development.

The question now is what KIND of preschool learning is most effective in improving the development of the child.

The Van De Riets believe that the sequential learning program of Herbert Sprigle provides the experiences that are necessary to accomplish this task. His "Learning to Learn" program concentrates on manipulating, organizing, classifying, and ordering materials designed to lead to internalized thought and effective verbal expression.

A survey of the literature of the causes and results of culturally disadvantaged reveals the following conclusions:

1. Culturally disadvantaged children are crippled in language development and concept formation.
2. Culturally disadvantaged children have deficient skills of listening.
3. Culturally deprived children show weaknesses in deductive reasoning.
4. The attention span is very poor in these children.
5. Culturally disadvantaged children have significant gaps in knowledge and experiences.
6. Culturally deprived children's concept of size is poorly developed.

Research evidence throws into question the importance of language and concept formation over other factors important in the learning process.

Koppitz, E. M., and others have found that perceptual-motor skills seem to be more important for good school achievement than verbal skills.

The literature seems to suggest that these children have undergone varying degrees of deprivation in all areas of mental development.

Thus, any program of amelioration must begin at the earliest phase of deprivation, not at the advanced phase and ignore the foundation.

Most educators and authorities in child development agree that intellectual curiosity and growth are nurtured when there is a variety of materials for exploration and manipulation, and adults who supply information, answer questions on the child's level of comprehension, and give him an opportunity to find out who he is and what he is able to do.

Current evidence indicates that early childhood is the most important period in the development of the child's ability to think, reason, and learn; thus, a new approach is needed which emphasizes principles of cognitive development.

c. Developmental theory

The program rests on the developmental theory of Herbert Sprigle.

The developmental model of the program is that cognitive development proceeds through motor-perceptual-symbolic phases.

Research indicates that a child goes through stages of development and at each stage he has characteristic ways of looking at and explaining the world to himself and others.

Mental development possesses an orderly sequence of motor-perceptual-symbolic phases with their periods of transition.

In the motor stage the child's first cognitive working concern is in manipulating the world through actions. By establishing a relationship between experience and action, the child becomes aware of certain surface features by which he can identify the objects with which he works and the world around him.

Through the perception of the world around him he learns the relationships between the various things he observes. He must be taught to perceive, recognize, categorize and discover relationships.

Leaving the perceptual stage, the child moves into the stage of symbolic formation which enables him to talk about and deal with things and ideas in the abstract, or in the absence of any observable concrete objects or relationships.

Culturally deprived children show a developmental lag in all phases of development and the symbolic phase is the most obvious.

However, less conspicuous than deficiencies in language and concept formation are poorly conceived body image, relationship of his own body to things in space, inability to relate one object to another object, and a failure to organize and integrate these relationships.

The abilities and skills the child needs, to cope with the first grade, are themselves the product of a long series of learnings that have their beginnings in the child's awareness of his own body and how it functions.

From extensive experimentation with his sensory and movement patterns the child learns first about himself and then himself in relationship to objects in space.

The authors have based their program upon certain principles of mental growth and child development:

1. Mental development possesses an orderly sequence and periods of transition.
2. Learning is an active, on-going process that occurs when material the child uses possesses certain properties: (a) it must be appealing and attractive enough to arouse the child's curiosity; (b) it must make the child feel reasonably sure of what he is doing; (c) and it must direct the child to a goal and at the same time give him some feedback concerning where he is with respect to the goal.
3. Children of the same chronological age manifest different developmental levels and different rates of learning.
4. The methods employed to teach the young child must be flexible, play-oriented, and be adaptable to different developmental and learning levels.

d. Instructional theory

The sequential learning program has three basic aims (Sprigle):

1. To help the child learn to learn.
2. To expose the child to a curriculum based on a continuity of learning experiences and developmental tasks, and
3. To provide the tools and techniques with which to stimulate movement from one phase of development into another.

In view of the programmers goals to successfully develop a foundation on which to build more complex learning, the tasks were reduced to the child's level of understanding.

The program made use of games and play activities which gave the child an opportunity to try things out on his own.

The children were neither pressured to learn nor flooded with information in an attempt to overcome their handicaps, but rather were given a minimum of information to use in a variety of ways.

Basic ideas were repeated each time extending and expanding the uses to which they could be put and the child was encouraged to verbalize his knowledge.

The teachers in this program are child-oriented rather than subject-matter-oriented. Their major purposes are to pose problems for the children, ask questions, and to stimulate interest and curiosity.

Since the aim of the program is to get the child to become active in the learning process and to make his own discoveries, formulate his own questions, and learn from his own activities, observations, and formulations, the teacher must be perceptive and sensitive to how the child works and uses the materials.

The teachers' observation and sensitivity to each child form the basis of grouping and regrouping.

The instructional theory behind this program was conceived as an outgrowth of the developmental theory as advanced by Sprigle. The teacher's role is to nurture the child through the motor phase, to the perceptual phase, and finally to the symbolic phase. Because children are viewed as going through these phases at different rates, instruction is geared toward allowing each child to start from where he is and move ahead according to the speed with which he acquires new abilities. Major attention is directed toward the child rather than the content because it is the development of the child's ability to manipulate, organize, classify, and order materials that form the basis of the program.

Summary of instructional theory

Seven basic principles of instruction:

1. The child must be an active participant in the acquisition of knowledge and be given a major share of the work in what he learns.
2. The child must receive feedback that that application of his knowledge makes a contribution to himself and someone else.
3. The internal satisfaction and feelings of adequacy which develop from the knowledge that he can cope with and master his environment stimulate the child's growth toward independence and achievement.
4. Learning becomes alive and more meaningful to the child when it is put into the form of a problem that poses a challenge and sparks his curiosity.
5. For learning to become a permanent part of the child's repertoire it must be immediately useful in his everyday behavior.
6. The child must be exposed to learning materials and situations which provide the opportunity for the interaction of multiple sensory and motor activities and for the accurate labeling and communication of the information received.
7. The timing, continuity, and structuring of learning experiences are more important than the simple exposure to them.

In order for the child to develop cognitively, he must be given opportunities to develop strategies of gathering information, problem-solving, and decision-making.

Parents must be actively involved in the program to reinforce school experiences; they must nurture the child in his progress through the stages of cognitive development.

II. Instructional System

a. Performance objectives

The major purpose of the program was to prepare the child not for first grade, but for learning.

The program has the goal of helping the children learn to learn, to think, to develop self-confidence and self-esteem through more effective and efficient coping behavior, be it of a social, personal, or academic nature.

While the program makes allowance for necessity of developing certain readiness skills that will facilitate performance in first grade, it does not constitute the primary aim.

Specific skills and concepts to be acquired

1. Information gathering and processing through the use of all the senses.
2. Observation, identification, and labeling of objects.
3. Attention to and concentration on attributes that discriminate one object from another.
4. Classification.
5. Classes and sub-classes.
6. Identification and classification on the basis of reduced clues.
7. Encouragement in the use of guesses and hunches.
8. Decision making.
9. Use of past learning to make decisions.
10. Problem solving.
11. Reasoning by association, classification, and inference.

12. Anticipation of events and circumstances.

13. Expression of ideas.

14. Imagination and creativity.

15. Conventional (in contrast to idiosyncratic) communication.

16. Operations on relationships.

17. Exploration of numbers and space.

b. Instructional organization

In order to prepare the child for learning, the curriculum was built on a series of developmental tasks that would emphasize manipulating, organizing, classifying, and ordering things that lead to internalized thought and effective verbal expression.

On the basis of the stages of development through which each child passes, instruction was organized as a carefully planned sequence of experiences that followed this course of development.

Each part of the program was to have some continuity with the learning that was to follow.

The developmental tasks were ordered to lead the child to an understanding and mastery of new information and situations as a result of what had been learned previously.

These stages of development provide the structure for the planned sequential learning program wherein each activity builds upon the vocabulary and experiences of the previous activities.

The curriculum progresses through a planned sequence of tasks designed to move the child from a stage of dependency on actual manipulation of concrete objects to the point where he can internalize and manipulate without the presence of concrete materials.

The particular content a child learns is not as important as how he learns it. In other words, process takes precedence over product.

The child is allowed to creatively explore his environment using the tools and techniques he has acquired in past learning situations.

A parent program is also included in the organizational plan.

Parents divided into 2 groups.

Their opinions were used to structure the children's learning experiences.

Monthly discussion groups were held.

Individual conferences were held in January and June.

c. Instructional content (Translation of theory into practical content)

The program departs from "Traditional" preschool programs which put a major emphasis on emotional-social development and readiness skills in preparation for first grade.

The content was designed to be worth knowing later on in school, at home, or on the playground.

The curriculum emphasizes not experiences *per se* but the making of keen observations about these experiences.

It puts special emphasis on visual, tactile, motor and verbal judgements and decision-making where the outcome is uncertain.

The curriculum moves from motor manipulation to the building of perceptual imagery to symbolic experiences through the medium of interesting and challenging games and activities.

The following is a summary description of the curriculum in each of the three phases:

Motor phase--activities that emphasize

- acquiring balance, laterality, directionality
- eye-foot coordination
- motor coordination
- muscular control

body image
spatial judgement
relationship of body to another object
control under distracting conditions
kinesthetic clues to aid spatial judgements
transfer from previous experiences
attention, concentration, decision-making
follow directions
understanding basic movement patterns of body
free, gross movements with arm and shoulders
tactile and kinesthetic clues of circular movement
size concept, location
tactile and kinesthetic clues of "lazy eight"
variations in use of plus sign
concepts of large, medium, small
starting, stopping movements, changing directions
concept of square, triangle
equivalence
concept of tall, short, tallest, shortest
scanning and exploration to solve a problem
additive concept of length
commutative property
observations about invariance of quantities
acquaintance with colored construction clay
mental imagery and verbal expression

Perceptual phase--activities that emphasize

self-awareness
experiences with parts of the body and their inter-relationships
acquaintance with common objects
associating clothes with parts of the body
verbalization and sharing of common experiences
organization, classification (furniture and rooms) (fruits) (vegetables) (meats)
judgements about spatial relationships as they relate to child's own body
auditory-visual association
purpose of transportation
mental representation in the absence of visual clues
verbalization of tactile impressions
body image without visual clues

perceptual awareness and discrimination
use of knowledge gained from previous experiences to develop symbolic representations
processing information needed to solve a problem
use of mental images to identify objects hidden from view
use of pictures to identify objects
use of past information to place objects together that go together
associating ideas, reasoning, and generalizing from previous experiences
relationships of different sized colored sticks
commutative property
additive property
equivalence
transfer of learning to new situations
spatial judgements
relationships of colors
conservation of substance
use of numerals to represent something
how numerals convey meaning
one-to-one correspondence
set theory
decision-making, probability, relational concepts and multiple class membership
keeping records
different bases (2, 3, 4, 5)
identifying objects on the basis of a few clues (perceptual imagery)
redundancy of details, construction of whole from details
hypothesis making and testing
reconstruction of objects from fragments
attention, concentration, ability to scan

Symbolic phase--activities that emphasize

verbal expression about previous experiences
group interaction
identifying source of sounds with no visual clues
use past experiences to match objects
attention, concentration
internalized conversation

reproducing on a horizontal line what has been
  briefly exposed on a vertical line and to
  report its classification
committing order to memory
precision in language usage
auditory discrimination
matching objects that rhyme with words
classifying and generalizing
how things are related
finding incongruities
cause and effect relationships
verbally interpreting environment
withholding judgement before acting
likenesses and differences
auditory associations
recognizing and coping with feelings
creative use of language
constructing stories with the use of pictures
ability to give clues about one's mental image
giving clues about identity of object constructed

Thus, the content of this program consists of a large number of developmental tasks which are believed to result in the stimulation of thinking, reasoning, and in making judgements.

Games

Constructed around 5 content areas:
Clothing
Food
Animals
Furniture
Transportation

Examples of this content are familiar to all SES backgrounds and are readily available.

Sequence of games moves from concrete to abstract level. (Ex. Real orange replaced by a picture of an orange, and later by statements about an orange.)

Each game or activity requires interplay of manipulation, perception, and verbalization.

This transformation process is based on theories of Piaget as to the importance of actions for cognitive growth.

d. Instructional methods and techniques

The desire was to reduce the developmental tasks to a level the child could understand.

The program makes use of a wide variety of games that allow the child to become active in the learning process and make his own decisions and discoveries.

The methods employed are flexible, play-oriented and adaptable to different developmental and learning levels.

In working with the children, the teachers consistently ask them questions, pose problems to them, and generally stimulate their interest and curiosity.

Children are given the freedom to define and structure their play and are protected by certain rules from intruders who might disrupt or destroy.

Still, the child is encouraged to externalize what was an internal process; verbal, motor and artistic expression are encouraged.

These methods are in keeping with the theory that learning is an active, on-going process and is not a private affair where the child is a passive receptacle that must be filled to be ready for first grade.

Children are encouraged to relate their experiences through a media of their choosing.

Stories are used to stimulate an interest in books that extends beyond the classroom; all books are accessible to children on a lending basis. Parents are encouraged to read to the child each night.

The involvement of parents is considered vital to the program, for learning takes place everywhere; cooperation of school and parents stimulates and accelerates its growth.

e. Instructional materials

The newly developed materials for the program were made to meet the following criteria:

1. They have to appeal to the child to evoke some curiosity to get him to try them.
2. They had to be interesting enough to the child to keep him playing.
3. The child had to understand the material so that he could feel sure of what he was doing and working toward.
4. The goal that the child was working to reach had to be clear to him and he had to know when and if he was making progress toward it.

A variety of games were selected that met these criteria.

The materials are flexible enough to be used by slow children as well as very bright ones; they can be made simple or complex and challenging.

The games place a major emphasis on manipulation, exploration, and experimentation.

The materials used were selected on the basis of their ability to stimulate thinking and the generation and expression of ideas.

Note: A complete description of the program and materials is contained in the publication Inquisitive Games by Herbert Sprigle.

III. Delivery System

a. Organization of the learning environment

The program requires two classroom areas: one is a work-play area that is large enough to accommodate twenty-four children who can engage in a variety of activities without competing for space or materials; a smaller room set apart from the work-play area is used for work with groups of four children in learning activities.

This kind of physical arrangement allows for both heterogeneous and homogeneous grouping of children. It provides for all children to work and play together in activities which they define and structure. From this general area, four children of the same developmental level are taken to engage in a planned learning experience.

Since children of the same chronological age reveal different levels of development and different rates of learning, those of the same level and rate are placed together.

The child is moved to another group and new material as growth occurs.

Continuous regrouping permits them to work on one level with one kind of material and at another level with another task.

Such flexibility prevents children from stereotyping each other and helps the child to recognize that he is better in some things than in others.

Whatever his level, he is assured of success.

The small work area and small groups facilitate the control of extraneous stimulation. The room is nearly barren except for the learning materials, so that the child's attention is drawn to the materials and the teacher rather than to distractions in the room.

The floor rather than tables and chairs is the work space.

The careful use groups is in accord with Piaget's premise that social cooperation is a principal formative agent in the growth of thought.

Stress is laid on mutual respect among the children--they must show respect for the learner by being quiet so he can think.

The child is made to feel important and what he is trying to achieve is worthwhile.

b. Pre-service and in-service training procedures and materials

Program has a unique teacher training program which permits student teachers to become involved in parent discussion groups in addition to classroom experiences.

One-way viewing rooms and monitoring systems permit additional students and faculty to observe the program without distraction to children.

IV. Evaluation System

First Evaluation

a. Evaluation instruments and procedures

Subjects: The subjects consisted of 72 culturally deprived Negro five-year-olds from Jacksonville, Florida.

Children were divided into three groups matched on the basis of socio-economic level and cultural background, age, sex, school readiness skills, and intelligence.

Matching on socio-economic level and cultural background was accomplished by selecting all subjects from homes in deprived neighborhoods of Jacksonville, who came from families with incomes below $3,000 annually. None of the parents were employed at an occupational level above unskilled laborer.

To control for intelligence and school readiness skills the three groups were matched on scores obtained on the Stanford-Binet Intelligence Scale and the Sprigle School Readiness Screening Test.

Instruments (Used to measure the developmental characteristics at the end of the preschool program) - Phase I

1.	General Intelligence	Stanford-Binet, Form L-M (1960) Human Figure Drawings (1963) Peabody Picture Vocabulary (1959)
2.	Perceptual-Motor skills	Bender Motor Gestalt (1964)
3.	Vocabulary development	Vocabulary subtests of S-B

4.	School readiness skills	Metropolitan Readiness (1949) School Readiness Screening (1966)
5.	Ability to express ideas	Ill. Test of Psycholinguistic Abilities (1961)
6.	Language comprehension	ITPA, Visual encoding subtest
7.	Verbal reasoning ability	ITPA, Auditory-vocal association subtest
8.	Social maturity	Modification of Long Beach Social Maturation Scale
9.	Spatial abilities	Seguin Form Board - Arthur Rev. (1947)
10.	Gross motor coordination	Rail Walking Test
11.	Concept formation	ITPA Visual-motor association subtest

At the end of the first grade (Phase II) the measures were the same except for the following changes: (1) the Wechsler Intelligence Scale for Children was also used to measure general intelligence; (2) instead of measuring school readiness skills the Stanford Achievement test was given to each child; (3) the rail walking test was not used; (4) ratings, on a ten point scale, were obtained by the examiners from each child's teacher on the following characteristics:

a. Leadership
b. Effort
c. Interest in school work
d. Ability in writing
e. Ability in reading
f. Ability in numbers and arithmetic concepts
g. Ability to get along with classmates socially and interpersonally
h. Overall discipline
i. Overall adaption to the first grade
j. Various intellectual and social-emotional characteristics

Procedure

Evaluation was based on the differential development of children in the sequential learning program (Group A) and those in two matched control groups: one (Group B) was exposed to a "traditional" preschool program which did not use the planned sequence of experiences; the second control group (Group C) consisted of children who were not exposed to any formal preschool program.

It was hypothesized that Group A would be superior to Group B and that Group B would be superior to Group C in all developmental measures which were taken.

Developmental measures were obtained at the end of the preschool program (Phase I) and again at the end of the first grade (Phase II).

The program lasted from September, 1965, to May, 1966.

The testing was done in individual rooms at the Learning to Learn School. Before the testing was begun, some time was spent in acclimating all of the children to the school setting, testing rooms, and examiners.

b. Research and technical support data

Results

Applying statistical techniques to the scores obtained on the nineteen different developmental measures employed, the following results were obtained:

1. The performance of the experimental group on all of the developmental measures was significantly superior to that of the control groups.
2. The "traditionally" trained group had superior performance to the no treatment group on about half of the measures. (This difference, however, was much smaller than the difference between the experimental and "traditionally" trained groups.)
3. By the end of the first grade, the children in the experimental group were still significantly superior to the

other two groups on 15 of the 17 developmental measures. (As in other studies of preschool programs the children without preschool experience made the largest gains in first grade.)

4. The effects of the experimental program are most evident in measures of intellectual functioning on which the traditionally trained children and the children without preschool experience are much below the experimental group.

Conclusions

1. Culturally deprived children who attended a preschool education program showed overall development superior to those who did not attend.

2. The experimental program designed to teach children how to learn resulted in large developmental gains while those attending a "traditional" preschool program approximately maintained their developmental level.

3. Culturally deprived children who did not attend a preschool program fell behind in their overall intellectual and cognitive development in the year prior to entering first grade while those attending preschool programs did not fall behind.

4. At the end of the first grade in public schools the children who attended the Learning to Learn Program maintained their superiority to the "traditionally trained" group and the no treatment group. The difference between the groups was smaller, however, at the end of first grade than at the end of the preschool programs.

Second Evaluation

a. Instruments and procedures

The study was designed to test whether the L-to-L Program would be effective with lower middle class children.

Population and sample

23 children in each group selected from lower-middle socio-economic class families whose parents had a high school education or less.

Occupationally the families consisted of blue collar and white collar workers living in rather homogeneous neighborhoods--average annual income was $6, 400.

This population was selected because it constitutes the largest segment of school children.

Children in the control group matched with A children on:

1. Age
2. Sex
3. Stanford-Binet IQ
4. School readiness skills (as measured by Sprigle School Readiness Test)
5. Motor coordination (Seguin Form Board)
6. Vocabulary development (Vocabulary subtest of S-B)
7. SES (parent's occupation, income, residence)

A children had more verbal skills.

It appears that L-to-L Program of most benefit to children having lower IQ's. These children were raised to an average level of functioning (as measured by all tests).

Ratings of children's progress by teacher and parents

Each child in both groups was rated at the beginning of the program and again at the end by his teacher and by one of his parents on a variety of behaviors; this "Progress Report" contained items measuring behavior in (1) intellectual development and (2) social and emotional development.

The teachers and parents of the C children did not see any significant improvement in their children on these measures.

However, both parents and teachers of the E children saw significant improvement in their children on five of the six measures.

Achievement motivation ratings by independent experienced teachers

Each of the children in the A group was rated by means of timed samples for achievement motivation. Two teachers, not connected with the program, each of whom had over 10 years of experience with elementary and preschool children, observed each child for 6 separate one minute samples during free play over a 2 week period near the end of the program. (Not possible to do in C group.)

95% of the time the A children were observed to have been involved in some kind of achievement activity (reading, writing, playing with games or being involved in physical activity having a specific goal). Any kind of creative play was also included.

Over 90% of the time the children were rated as showing persistence and effort in their activities and as approaching the play activity in a planned and organized way.

62% of the time they were rated as being very observant about what they were doing and conscious of a definite goal; 29% of the time they were rated as having some goal for their activities and an awareness of working toward it.

Instruments

Same as in first evaluation with the following two additions:

1. Creativity and Imagination (Ratings of pictures and stories made by children)
2. Achievement motivation (Ratings by independent observers and by teachers)

Procedure

September, 1966:

(A) One group attended L-to-L Program

(C) Second group exposed to traditional methods; the program consisted of group and individual activities that gave the children a large variety of stimulation, concepts and ideas; the emphasis was on self-help, socialization and sensory-motor experience.

May, 1967:

Evaluation data was collected.

b. Results

Pre-post comparisons

Both groups made highly significant gains during the year.

The experimental group made the larger gains on the four test variables.

See Table I.

Comparisons at the completion of the program

The means and SD of the 25 developmental measures taken by both groups at the end of the program show that (except for 4 measures) the experimental group was significantly superior to the traditional group.

Differences were so large as to be of practical as well as statistical significance.

Differences between A and C were most apparent in broad area of language skills.

Achievement motivation ratings by program teachers

Each child in both groups was rated on effort, persistence, goal directedness, independence of work, and fear of failure.

The A children were rated significantly better in the areas of effort and goal directedness and were rated higher on the other characteristics but these differences were not statistically significant.

Table I

Mean Scores of Experimental and Control Groups
Before and After Kindergarten Experience

			N	Pre-Mean	Post-Mean	t	p
1.	Binet Intelligence Score	E	23	102.78	112.83	4.66	.001
		C	21	101.95	107.33	2.31	.05
2.	School Readiness Screening Test	E	23	15.39	24.65	12.44	.001
		C	21	15.85	22.24	8.39	.001
3	ITPA--Vocal Encoding	E	23	11.13	16.47	4.50	.001
		C	21	10.86	13.38	2.30	.05
4.	ITPA--Auditory-Vocal Association	E	23	14.00	18.57	7.27	.001
		C	21	13.38	17.43	7.67	.001

Parental training program

There was unanimous agreement by the parents that the school significantly helped their children in all the areas they had listed as important at the beginning of the program.

Progress questionnaire: indicated that parents felt that their children had changed in a positive, growth-producing way.

Parents also felt that they themselves had profited from the program; they had more respect for a young child, they learned the habit of listening to their child, they felt closer to the child because he is now "an interesting child." The parent-child relationship was improved and this enhanced the child's growth and development.

Program was a success from the parents' point of view.

Parents showed great interest in the program; attended meetings regularly; desired to continue the meetings after the program was over.

A comparison of the effect of the L-to-L Program on lower-middle class and culturally deprived children

Question to be answered: What kind of child can most benefit from the L-to-L Program?

Can be answered by comparing the results of the present study with those of a study conducted a year earlier with culturally deprived Negro children who attended the L-to-L Preschool. The culturally deprived children were superior to the other groups.

From comparisons, the lower-middle class children were ahead of the culturally deprived at the end of the program (but they also started with higher pre-program scores).

Thus, the Learning to Learn Program results in greater improvement in the culturally deprived children than it does in the lower-middle class children.

At the end of the program, the culturally deprived children function at a level very much like that of the lower-middle class children exposed to a traditional program.

Conclusions

The structured program based on principles of cognitive development had a greater effect than the traditional programs.

Gains were made in the areas considered most important by educators--verbal skills, creativity, and mathematical concepts.

Children who benefit most from L-to-L Programs are those who are behind in their intellectual development initially, including the culturally deprived.

The Program appears to be ideal for the culturally deprived, the future drop-out, and the child who can't keep up in a traditional program.

The Program results support the theory behind early childhood education, especially for children from lower socio-economic backgrounds.

Different kinds of preschool programs can and do affect the overall development of the child differently.

A well-organized program, such as the Learning to Learn Program, achieves a larger developmental gain than one without structure and emphasis on cognitive development.

Follow-up studies

Indicate the L-to-L children are maintaining the gains attained.

At the end of the first grade, they are still markedly superior to matched groups of C children.

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Program Title: Ypsilanti Perry Preschool Project
(1962-1967)

Principal Investigators or Developers:

Ypsilanti Perry Preschool Project

Address: High/Scope Educational
Research Foundation
Ypsilanti, Michigan

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PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Aimed at disadvantaged children who are functionally retarded (Black).

Project was an experiment to assess the longitudinal effects of a two-year preschool program designed to compensate for functional mental retardation found in some disadvantaged children.

Program consisted of a daily cognitively oriented preschool program and home visits, each week (ninety minutes) to involve mothers in the educative process.

Cognitive objectives: Program operated five days a week, three hours per day.

b. Data oriented rationale

Program grew out of a series of studies in 1958 and 1959 of the Ypsilanti Public Schools (by Weikart).

Studies showed:

1. By ninth grade at least fifty per cent of the children were average in grade from one to five years.
2. Achievement rate for these children was considerably below average on national norms.
3. Lower class children had much lower achievement rates and much higher retention rates than those in middle class schools.
4. Example--Fifty per cent of children had already been retained by fourth grade.

An ad hoc committee was established to solve problem of underachievement of lower class children.

2

Decisions made:

1. Program adopted would be only for disadvantaged children.

2. Focus on black community (larger than disadvantaged white).

3. Program would be designed to prevent deficits from occurring, so that children could take best advantage of school.

4. Because of State of Michigan ruling, program would include only those who tested in the educable retarded range. (IQ scores assessed functioning levels created by the interaction between the environment and the child, Hunt.)

Program launched (1962) on practical grounds that there was little hope for reform of school system's educational practices.

At start, almost no evidence to suggest preschool education as a viable alternative solution.

In spite of lack of data, preschool intervention seemed promising.

Finding of Bloom (1964) and Scott (1962) gave support to early intervention.

Krech (1960) measured physiological changes in brain which related directly to early experiences.

Pasamanick and Knoblock (1961) documented the impact of deprivation in study of infant development.

In general, Perry Preschool Project was launched because of strong practical needs to solve major problems faced by children enrolled in public schools.

It was supported by a thin theoretical framework suggesting preschool intervention might be an effective ameliorative technique.

c. Developmental theory

Curriculum which evolved over the duration of the project was derived mainly from Piagetian theory of sequential development of intelligence.

Also based on Skinner's behavior modification techniques.

Piaget's theory provides the foundation for the preschool curriculum which has as its major goal the cognitive growth of children, a prerequisite for subsequent achievement in school and fulfillment as a thinking human being.

Skinner's work forms the basis of the parent education programs which focuses on teaching parents child management skills deemed essential for a gratifying, growth-producing home life.

Program based on Piaget's concept that intelligence develops by qualitatively distinct periods, the sensory-motor period, the pre-operational period, the period of concrete operations, and the period of formal operations.

Attainment of a later stage is not possible without solid attainment of the earlier stages.

Although the age at which children enter any of the periods may vary, the sequence is invariant.

Passage through the stages grows out of the coordination of actions, at first physical, and then mental, rather than by manipulation of symbols.

Curriculum goals are founded on Piaget's two aspects of knowledge:

1. Operative aspect involving mental operations.
2. Figurative aspect pertaining to type of symbolization involved in operations.

d. Instructional theory (as it evolved by 1965)

Because program focused on cognitive objectives, emphasis was placed on teacher's flexibility in gearing classroom activities to individual children's level of development.

Heavier emphasis was placed on verbal stimulation and interaction, socio-dramatic play, and on field trips than on social behavior and other traditional concerns of nursery schools.

Through careful sequencing of instructional activities, child will develop cognitive skills which he failed to acquire earlier.

Instruction based on Piaget's sequential development of intelligence--see where the child is and then provide him with sequenced activities and allow him to develop.

II. Instructional System--1962-1965

a. Performance objectives

To foster a positive change in intellectual growth which would lead to academic success and social adjustment in the elementary grades.

Emphasis was placed on developing an intensive language environment, thinking skills, impulse control and task orientation.

b. Instructional organization

The cognitive lessons used attempted to structure learning by requiring teachers to select certain thematic units for study, determine the objectives for the units, and then sequence the learning tasks needed to accomplish these objectives.

Thematic units designed for use in area teaching centers were systematically developed to emphasize following cognitive processes:

1. sensory perception
2. language development
3. memorization

4. concept development

c. Instructional content

Units were selected for study as a way to structure learning experience.

The topic was not the goal in itself; emphasis during the teaching of units was on developing language, thinking skills, impulse control, and task orientation.

Any units were selected if they could be developed to further cognitive processes:

sensory perception
language development
memorization
concept development

Units revolved around language usage, refined auditory discrimination, dramatic play, pre-math training, visual training, motor coordination and general science training.

d. Instructional methods and techniques

Described as "verbal bombardment". Here, the teacher maintains a steady stream of questions and comments to draw the child's attention to specific aspects of his environment.

It was used when rewarding him and disciplining him, as well as instructing him in academic pursuits.

The complexity of the language increased as the child's verbal ability developed.

Weekly afternoon home visits--

Mothers encouraged to participate in actual instruction of her child.

Teacher's child management techniques indirectly taught mother alternative ways of handling children.

Group meetings to reinforce changes in parents' views about education.

e. Instructional materials

Basically same as in a traditional nursery school.

III. Delivery System

a. Organization of the learning environment

Four preschool teachers jointly operated the morning program which was divided into two main instructional periods separated by a refreshment period.

First period: Sixty minutes long

Took place in largest of school's three rooms.

Each teacher was stationed in one of the four "area teaching" divisions of classroom (arts and crafts, housekeeping, pre-academic, block activities).

Children free to select any one of four activity centers.

Could participate or observe as long as he chose and move from one area to another.

Plans structured to include a variety of activities easily adaptable to individual children.

Second period: Twenty minutes long

More highly structured.

Children divided into two homogeneous groups, twelve per group, based "cognitive ability."

Two teachers worked with each of these groups (pupil/teacher ratio--6:1).

Groups met in two small separate rooms adjacent to larger room used in first period.

Instructional units were sequentially introduced by the two teachers, and individual lessons within a unit were designed to teach a particular skill or concept believed fundamental to future learning and observed missing.

Two groups were programmed separately:

> advanced group undertook long units involving language usage, refined auditory discrimination and complex dramatic play.
>
> less advanced group (mainly three-year-olds) spent time in basic skill training and simple pre-math concepts.

Field trips-- scheduled sequentially with emphasis on a single aspect.

Used to develop language concepts. To suggest parallels between reality and representation in books, to foster occupational role identifications, to raise aspiration levels, and to develop appropriate social behaviors.

Afternoon home-based program involved mother in education of her child, demonstrated process of teaching and tutored child on one-to-one basis.

Teacher became more aware of child's deficits.

Two types of afternoon sessions:

1. Cognitive skill training
   visual training
   fine-motor coordination
   auditory discrimination
   pre-math training
   general science training

2. Field trips
    reinforced concepts taught in morning program

Monthly parent meetings:
  held at school
  planned by parents
  men and women met separately
  no outside experts

II. Instructional System--1965-66

a. Performance objectives

Same as earlier, but with emphasis on facilitating the transition from sensory-motor to conceptual intelligence (Piaget).

Goals not primarily to enrich and extend children's experience, but to enable them to acquire the basic cognitive skills that they never had developed.

Interim objectives

Cognitive Objectives

1. To understand and respond to temporal relations
    - a. Beginning and end
    - b. Ordering of events (before, after, first, if-then)
    - c. Time periods containing different lengths of time (day, week)

2. To understand and respond to spatial relations
    - a. Prepositions of positions (on, under)
    - b. Prepositions of direction (toward, from)
    - c. Prepositions of distance (near)

These goals are experienced in relation to the self and to objects.

3. To understand and use seriation
   - a. Sizes to four (big, little)
   - b. Quantities to four (many, few)
   - c. Qualities to three (hard, soft)

4. To understand and use classification
   - a. Conceptual (gross discriminations)
   - b. Descriptive (size, shape, color)
   - c. Relational (function)

Developmental Objectives

1. To develop levels of symbolization
   - a. Real objects--identifying and naming real objects (duck)
   - b. Index
     - 1. Marks causally related to objects (foot prints)
     - 2. Object permanency
     - 3. Object constancy
   - c. Representation
     - 1. Pictures (realistic--abstract; recognize picture of a duck)
     - 2. Clay models--drawings
     - 3. Motor encoding (squatting walk like a duck)
   - d. Sign--words (recognizing the word duck)

2. Operational levels
   - a. Motor
     - 1. Child uses own body to experience concepts
     - 2. Child operates on objects
     - 3. Child uses objects to operate on other objects
   - b. Verbal
     - 1. Teacher provides verbal stimulus
     - 2. Child relates what he is going to do before he does it
     - 3. Child verbalizes while performing action
     - 4. Child interprets what he has done after he has done it
     - 5. Child can verbally evaluate his own work from memory

3. Impulse control
    a. To help child develop longer attention span
    b. To assist child in planning and carrying out self-selected activities

Mental Health Objectives

1. Body image--internal feelings about self
2. External--feelings about others

Group Process (Socialization) Objectives

1. To help the child develop an awareness of group functioning
    a. An understanding of his rights in and contributions of other members of the group (adults and peers)

b. Instructional organization

More highly structured than during period from 1962-65. Influenced by developmental theory of Piaget. Designed to follow the sequence of growth stages (Piaget).

Program designed to promote an understanding of symbolization and elementary types of relationships.

Symbolization helps child move from concrete, sensory-motor intelligence to representational intelligence.

Elementary relationships include those between things and events.

Careful programming was essential so as not to skip important intermediate steps.

Goals of each specific lesson were determined (not done during period 1962-65).

Each of these interim objectives were designed to reinforce terminal objective.

Instruction was broken down into objectives for the week, the day and the lesson.

c. Instructional content

Every activity was especially selected for its contribution to learning process.

Traditional materials were used to develop cognitive abilities of children (rather than specific content knowledge).

Activities aimed at developing an understanding of

1. temporal relationships
2. spatial relationships
3. seriation
4. classification

They were not "taught" reading, math, spelling, science, etc. Rather the cognitive skills were developed through activities of different kinds--skills that would foster success in later academic endeavors.

d. Instructional methods and techniques

"Verbal bombardment" (Weikart).

Teacher and children planned activities for work period.

Constant interaction between teacher and pupils.

Children encouraged to verbalize what they were doing.

Children asked to evaluate themselves during work time.

Teacher carried on informal conversations with children during refreshment period.

Methods and techniques adopted to coincide with cognitive and developmental objectives of program.

Socio-dramatic play as defined by Sarah Smilansky.

e. Instructional materials

Basically same as in traditional nursery school, but were used in different ways and for different purposes.

Every item in room was especially selected for its contribution to the learning process.

III. Delivery System

a. Organization of the learning environment

Daily routine same as 1962-65 period except for addition of four new activities (*).

8:45	-	9:00	Arrival
* 9:00	-	9:15	Planning meeting
9:15	-	9:45	Area teaching
* 9:45	-	10:00	Evaluation
10:00	-	10:15	Clean-up
10:15	-	10:25	Juice time
10:25	-	10:45	Small group teaching
*10:45	-	11:00	Activity time
*11:00	-	11:15	Circle time
		11:15	Dismissal

Four new time blocks added to further increase opportunity for verbal interaction among teachers and students and to reinforce cognitive lessons.

Home-based afternoon program and weekly parent meeting same as during 1962-65 period.

b. Pre-service and in-service procedures and materials

No data available.

IV. Evaluation System

a. Evaluation instruments and procedures

Sample Selection and Description

Population of Project defined as three- and four-year-old children living within the boundary of the Perry School attendance area, Ypsilanti, Michigan, coming from "culturally deprived" families, and testing in the range of "educable mentally retarded."

At start of Project, Perry School had an all black student enrollment and was staffed almost entirely by Blacks.

To determine the specific characteristics of the project population, a questionnaire was administered to the approximately 300 families children attending Perry School by classroom teachers during the May, 1962 parent-teacher conferences. (Home visits were made to those who did not attend.)

By comparison, the Perry Preschool sample is at the low end of the relatively underprivileged Perry School population.

During the five years of the project, 123 children were chosen from the Perry School attendance area for the sample.

Of these, fifty-eight attended the preschool (E group) and sixty-five did not attend the preschool (C group).

Each fall, the project's staff used school census data to locate all families in the Perry School area with three-year-olds (and four-year-olds in the first year of operation).

These families were then interviewed to determine which ones had low scores on a Cultural Deprivation Scale.

The cultural deprivation (C. D.) rating was arrived at using a weighted formula involving parent's education, parent's occupational level, and rooms/person ratio. Each component was divided by its standard deviation calculated from the Perry School population to equate the different distributions. This index is an adaption of the one used by Martin Deutsch of the Institute of Developmental

Research in New York City to determine a family's socio-economic status. A cut-off point of eleven was adopted as the upper limit.

Children with a C. D. rating below eleven were examined using the Stanford-Binet Intelligence Scale. Those evaluated as educably mentally retarded (S-B scores below eight-five) and having no organic involvement were considered eligible for program.

Eligible children were then assigned to either an experimental or a control group in a random manner, except the two groups were matched on C. D. ratings, and Stanford-Binet scores. When possible they were matched on boy/girl ratio and percentage of working mothers.

Experimental Design

Four independent variables were investigated:

1. preschool vs. no preschool (the experimental treatment)
2. boys vs. girls
3. selected home background variables
4. certain medical birth complications

In addition, fall entering year cognitive variables were considered to be independent variables for use in some analyses.

Preschool, The Experimental Treatment--

Main independent variable was participation in two years of preschool for experimental children, contrasted with no treatment at all (beyond annual testing) for the control children.

E children attended preschool half-days, five days a week, from mid-October through May.

Teachers visited each E child in his home for a ninety-minute instructional session once every week during school year.

Five pairs of experimental and control groups were used in five replications of basic experiment (to guard against unusual circumstances in any single year that might contaminate findings).

Each of five pairs was called a "Wave." and given a number from zero through four. (See table, "Annual Grade Status of Groups to 1967.")

From year to year there were changes made in the preschool curricula which apparently affected the experimental group data.

These changes evolved as the experimenter's knowledge of effective instructional techniques grew, rather than being systematically manipulated changes; thus, decision was made not to formally distinguish among waves because of variations in their preschool experiences.

Following completion of preschool for E groups each year, both E and C children entered regular public kindergarten for Perry School district, just as children would have done if no intervention had occurred. No effort was made to assign children to particular teachers or to alter elementary curriculum in any way. Elementary teachers were not informed of the identity of C or E children, and most had little or no knowledge of the aims and procedures of the experimental preschool. (However, kindergarten teachers could usually identify E children by their classroom comments about preschool experiences.)

There were no important differences between the E and C groups regarding the schools and classes they attended after they entered the public school system.

Although the post-kindergarten environments for project children became increasingly diverse, no systematic differences emerged between the E and C groups.

Home Background Variables--

Data collected using following instruments.

Cognitive Home Environment Scale (CHES)
Inventory of Attitudes of Family Life and Children (Inventory)
Perry Demographic Questionnaire

Table 3-2

Annual Grade Status of Groups to 1967

		Group Size	1962-1963	1963-1964	1964-1965	1965-1966	1966-1967
WAVE 0	E C	13 15	Preschool 1st year	KDG	1st	2nd	3rd
WAVE 1	E C	8 9	Preschool 1st year	Preschool 2nd year	KDG	1st	2nd
WAVE 2	E C	12 14		Preschool 1st year	Preschool 2nd year	KDG	1st
WAVE 3	E C	13 14			Preschool 1st year	Preschool 2nd year	KDG
WAVE 4	E C	12 13				Preschool 1st year	Preschool 2nd year

Since most of these measures were taken after the start of preschool, this is, after any of the home variables might have changed, they were treated as independent variables in spite of indications that they might have been somewhat dependent upon the experimental treatment.

Birth Variables--

Data were collected for a subsample of 101of the 123 Perry Project children, including information about both the mother and infant.

Dependent Variables--

Separated into three categories

1. cognitive
2. achievement
3. socio-economic

Data were collected in the fall before children entered project, and every spring thereafter until the third grade.

Cognitive variables were measured using four different instruments:

1. Stanford-Binet Intelligence Scale, Form LM
2. Arthur Adaption of the Leiter International Performance Scale
3. Peabody Picture Vocabulary Test
4. Experimental Edition of the Illinois Test of Psycholinguistic Abilities

Achievement variables were collected after children entered elementary school:

1. California Achievement Tests
   Lower Primary Battery (grade one and two)
   Upper Primary Battery (grade three)
2. Gates Reading Tests (kindergarten, grades one and two)

Socioeconomic variables were collected from teachers using two rating scales:

1. Pupil Behavior Inventory
2. Ypsilanti Rating Scale

Data Collection--

In order to identify eligible children each year, names of all three-year-old children living within Perry School district were taken from public school census.

Parents of each child were visited by one of preschool teachers to obtain information necessary to calculate a cultural deprivation rating.

A second visit was made to all families falling below the C. D. rating cut-off point to get permission to test their children with the Stanford-Binet.

For those falling below the cut-off point, assignment was made to either the E or C group.

Annual testing was performed by qualified testers.

Outside testers who know little about the project were hired for several weeks each spring.

For all children, testers were instructed to develop good rapport with children, and to make conditions as favorable as possible within the limits of standardization.

To minimize the possible confounding effects of tester differences, children from both E and C groups, from different waves, from both sexes, and so on, were assigned to each tester in as balanced a manner as possible.

Testers were not informed whether the children assigned to them were E or C.

All of the children in the Project were Black, but few of the testers were Black; analyses were almost entirely based on comparisons of the relative performance of E to C children, minimizing the importance of possible racial tester effects. (Early in the Project this problem was investigated statistically and no significant tester differences were found.)

In the last data collection, over ninety per cent of the original sample were once again tested.

The investigators intend to follow the Perry Project children through high school, and into adult life if circumstances permit.

Data Processing--

Scores were punched onto IBM cards (and errors removed).

All statistical calculations were performed on the IBM 360/67 computer.

Calculations on which the most important conclusions were based were checked especially thoroughly.

Statistical Analysis--

Routine descriptive statistics (means, S. D., frequency counts, etc.).

Three statistical techniques were used to analyze data:

1. analysis of variance
2. stepwise regression
3. product-moment correlation

Analysis of variance was used to determine whether differences occurred between E and C children on each of the dependent variables.

Regression analysis was used to calculate the proportion of variance on selected dependent variables that could be explained by knowing whether a child was E or C; in addition, by using stepwise regression, key independent variables could be empirically ranked on their ability to explain variance of the dependent variables.

Analysis of variance and regression analysis answer the questions: "Did preschool made a difference?"
"How important was the difference?"

Correlation analysis was used to explore the data for possible interrelationships that could lead to new hypotheses for future experimental investigation.

b. Research and technical support data

Results of analysis suggest that the preschool had positive effects in each of the three categories of dependent variables.

Cognitive effects

The E group was significantly superior to the C group on each of the four cognitive measures both years of preschool.

Two years after the end of preschool, differences between the E and C children decreased considerably although they still remained large enough to maintain significance on the Stanford-Binet and the PPVT.

The cognitive effects lasted moderately long before finally disappearing.

In terms of predictive ability, knowing which children went to preschool permitted better prediction of cognitive performance during the two years of preschool than did knowing children's status on any of the other independent variables.

Children's entering cognitive performance closely followed preschool attendance in predictive importance until children entered kindergarten, when it replaced preschool attendance as the most important predictor.

There were few sex differences except with the Peabody Test, on which the boys generally scored higher than the girls.

Table 3-3

Wave Grouping for Analysis

Test Dates	FEY, SEY	S2Y	SKG	S1G	S2G	S3G
WAVE 0	Preschool Year 1		KDG	1st	2nd	3rd
WAVE 1	Preschool Year 1	Preschool Year 2	KDG	1st	2nd	
WAVE 2	Preschool Year 1	Preschool Year 2	KDG	1st		
WAVE 3	Preschool Year 1	Preschool Year 2	KDG			
WAVE 4	Preschool Year 1	Preschool Year 2				
Total N	E 69 C 75	E 45 C 50	E 46 C 52	E 33 C 38	E 21 C 24	E 13 C 15

Table 3-6

Typical Analysis of Variance Data Matrix
(Fall Entering Year Configuration)

		WAVE 0	WAVE 1	WAVE 2	WAVE 3	WAVE 4
Experimental Group	Boys					
	Girls					
Control Group	Boys					
	Girls					

Achievement effects

The experimental group was significantly superior to the C group on the CAT in each of the first, second and third grades revealing long-term differences on the most important dependent variable.

However, although the preschool appeared to be very effective for girls, for some as yet unknown reason it was less effective for boys.

Home background factors accounted for important amount of variance in the achievement scores for each of the three grades.

In addition, entering cognitive performance correlated moderately high with achievement scores, and accounted for more of the achievement variance than preschool attendance in each of the three grades.

Thus, even though important, the effects of preschool on later achievement were smaller than the effects attributable to certain aspects of home environment, and smaller than the effects attributable to entering cognitive performance.

Socio-emotional effects

Children who participated in the preschool program were rated as being better adjusted and showing more academic promise than control children in the first and second grades, but not in kindergarten or third grade.

In all cases, scores on the three teacher rating factors correlated positively with achievement scores, often moderately high and over.

Results suggest that children who do well in school achievement also tend to be more socially developed and better emotionally adjusted.

The children in the preschool program did not evidence any adverse effects resulting from the so-called "pressures" of the Cognitively Oriented Curriculum.

Some Specific Findings

Data suggest that achievement and adjustment may occur together. Apparently, teachers see children as adjusted either while the children are achieving or afterward. The data support the position that preschools which directly help children to achieve, as this one does, do not hinder, but rather help the child's adjustment.

Data indicate that teachers see their students fairly accurately in terms of achievement potential and general social adjustment. Simple good behavior and willingness to conform do not seem to substitute for actual academic achievement.

Seems that preschool "frees the child from the normally expected relationships with demographic variables that usually "determine" academic progress. For example, in third grade, five of the twelve E children but none of the fifteen C children were at or above fifty per cent on the CAT.

General Findings

1. Children who participated in preschool obtained significantly higher scores on measures of cognitive ability than control group children. As both groups progressed through school this superior functioning disappeared by third grade.

2. Children who participated in preschool obtained significantly higher scores on achievement tests in elementary school than control group children. This significant difference continued throughout the years of follow-up, including third grade.

3. Children who participated in preschool received better ratings by elementary school teachers in academic, emotional, and social development than control group children. This difference continued throughout the follow-up years including third grade.

Conclusion

Preschool programming, at least as represented in this project, is an effective device for improving the general functioning level of disadvantaged black children who were initially diagnosed as functionally mentally retarded.

V. References

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Weikart, D. Preliminary results from a longitudinal study of disadvantaged preschool children, 1967. Educational Resources Information Center, Document Number ED 030 490.

Weikart, D. Relationship of curriculum, teaching, and learning in preschool education. Paper presented at the Hyman Blumberg Memorial Symposium on Research in Early Childhood Education, The Johns Hopkins University, February, 1971.

Weikart, D., Deloria, D., Lawser, S. Longitudinal Results of the Ypsilanti Perry Preschool Project, Ypsilanti, Michigan: High/Scope Educational Research Foundation, 1970.

Program Title: Comparison Study of Three Programs:
Cognitively Oriented, Language
Training and Unit Based
September 1967-1970

Principal Investigators or Developers:

David Weikart

Address: High/Scope Educational Research
Foundation
Ypsilanti, Michigan

Source:

Weikart, D. A comparative study of three preschool curricula. Paper presented at the meeting of the Society for Research in Child Development, Santa Monica, California, March 1969.

IV. Evaluation System

a. Evaluation instruments and procedures

Method

Project was established in the fall of 1967 to document and evaluate three curricula believed to have remedial potential for the disadvantaged.

1. Unit-based curriculum
2. Cognitively oriented curriculum
3. Language training curriculum

1. Unit-based curriculum

Emphasizes the social-emotional development goals of the traditional nursery school programs.

Major features are the introduction of themes and material to acquaint child with the wider environment; close attention to the individual social and emotional needs of each child; and a good deal of permissiveness in classroom operation.

2. Cognitively oriented curriculum

Developed during five-year-long Ypsilanti Perry Preschool Project (1962-67).

Is a carefully structured program specifically designed for use with disadvantaged children who are functionally retarded.

3. Language training curriculum

Bereiter and Engelmann.

Emphasizes basic academic skills.

Task-oriented.

Employs many techniques from foreign language training.

Includes teaching of arithmetic and reading.

Designed for disadvantaged but not before been tried on functionally retarded.

Sample

E group-- children drawn from the total available population of three- and four-year-old functionally retarded disadvantaged children in the Ypsilanti, Michigan Public School District.
(N_1 = 33; N_2 = 20; N_3 = 13)

C group-- is one of the five no-treatment control groups from the Perry Preschool Project.
(N_1 = 37; N_2 = 23; N_3 = 15)

Design

All treatment groups were balanced by measured intelligence, sex, and race.

Two teachers were assigned to each curriculum model.

They taught for one-half day and then conducted a teaching session in home of each of their children for ninety minutes every other week.

Home teaching phase

Executed in same teaching style as classroom program child attended.

Essential to demonstration aspect of the project is that all three programs had clearly defined week-by-week goals.

Curriculum implementation followed a carefully planned daily program designed by the three teams of teachers to achieve the goals of their curricula.

Provision for teacher involvement is a crucial aspect of the over-all project.

b. Research and technical support data

Results

To the designers surprise, each of the three programs did unusually well on all criteria.

The initial findings indicated no differences among the three curricula on almost all measures used.

Intelligence tests (Stanford-Binet)
Classroom observations
Observations in free play settings
Ratings of children by teachers and independent examiners
Evaluations by outside critics
S-B IQ gains by three-year-olds were 27.5, 28.0, and 30.2 points in first year

Data were replicated with essentially the same findings at end of second year (1969).

While data are not complete, results are not what were expected; it was thought that immediate differences would be found on most measures among three models.

When it was possible to maintain equal momentum and staff commitment among three programs, same results on most measures were obtained.

When momentum lost, (as in last year of unit-based curriculum) results shifted in favor of the cognitively oriented and language training curricula.

Weikart concludes that results of different curricula reflect staff model not program model effects!

By end of third year of study unit-based curriculum showed only a very small gain on the S-BI T, as compared to the other two programs.

This was a drop from the gains made by those in the unit-based curriculum during the first two years.

Appears that unit-based curriculum doesn't have the necessary power to make significant impact on important dependent variables.

However, because the drop occurred so gradually, other problems might have been involved aside from statistical variation.

Further investigation indicated fault rested with the project director (Weikart).

Basic conclusion

The operational conditions of an experimental project are far more potent in influencing the outcome than the particular curriculum employed.

Curriculum is more important for the demands it places upon the project staff in terms of operation than for what it gives the child in terms of content.

Specifically

1. Children profit intellectually and socio-emotionally from any curriculum that is based on a wide range of experiences.

2. The curriculum is for the teacher, not the child; it should permit a structuring of the teacher to guide him in interacting with the theory being applied and the behaviors of the child.

Decision-generating conclusion

Effective preschool program must have an effective staff model that provides at least two major elements, planning and supervision, of a high intensity.

Not necessary, then, to wait for the curriculum-- we are free to develop or employ any curriculum we believe will match the needs of the children and permit an adequate staff model.

V. References

Weikart, D. A comparative study of three preschool curricula. Paper presented at the meeting of the Society for Research in Child Development, Santa Monica, California, March, 1969.

Program Title: Ypsilanti Early Education Program
September 1967-1970

Funded under Title III (ESEA)

Principal Investigators or Developers:

Norma Radin
Research Coordinator

Address: Ypsilanti Public Schools
Ypsilanti, Michigan

Sources:

Radin, Norma. Piaget, Skinner, and an intensive preschool program for lower class children and their mothers. February, 1968. Educational Resources Information Center, Document Number ED 027 966.

Kamii, C., and Radin, N. The Ypsilanti Early Education Program. November, 1967. Educational Resources Information Center, Document Number ED 022 531.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Aimed at disadvantaged four-year-olds.

Goal--cognitive growth as a prerequisite for subsequent achievement in school and fulfillment as a thinking human being.

Parents are an integral part of program; taught child management skills deemed essential for a gratifying, growth-producing home life.

Both phases considered essential.

Time element one-half day, four days per week, October to June.

∴ cognitively oriented and emotionally (socially) oriented (inner control).

Twin Objective--intellectual development and self-direction.

Goals of program

1. To develop a preschool curriculum for use in a classroom and in a home tutorial setting based on Piaget's theory of sequential development of intelligence.
2. To develop a model of curriculum innovation in a school system utilizing a triad of theorist, diffuser, and classroom teacher.
3. To develop a group parent education program focused teaching mothers how to foster the development of internal control in their children, through use of a behavior modification technique (Skinner). A secondary interest is cognitive development.

Program emphasizes

1. development
2. evaluation

b. Data oriented rationale

Growth in both intellectual ability and self-disciplines are essential for success in school, and ultimately in our industrialized society.

Previous projects demonstrated need for more precise teaching if preschool education is to be effective.

c. Developmental theory

Based on theories of Jean Piaget and B. F. Skinner.

Piaget--sequential development of intelligence.

Skinner--behavior modification techniques.

Piaget

1. Intelligence develops by distinct stages.

2. A later stage is not possible without the attainment of solid earlier stages.

3. Ability to "think" grows out of coordination of actions rather than manipulation of symbols.

d. Instructional theory

Children must be given numerous opportunities to engage in active manipulation of objects.

Experiences are sequentially presented to child.

Child learns by discovering the relationships among objects as he acts on objects.

Question of how to teach must be re-stated in terms of how to structure teaching situation to encourage child to act, to judge, and to discover.

II. Instructional System

a. Performance objectives

Improved intellectual functioning.

Improved social skills (motivation, inner control).

In Piagetian terminology

1. To help child move from sensory-motor period to the preoperational period.
2. To help child move from concrete to symbolic level.

b. Instructional organization

Curriculum design results from following

EEP consists of one theorist, two diffusers, and ten classroom teachers (and ten aides).

(Diffuser: a master teacher who is able to comprehend the essence of the theory and capable of creatively translating goals into specific teaching activities).

Theorist and diffusers meet several times per week.

Each diffuser meets with five teachers weekly.

Entire staff (including aides) meets as a unit on Friday.

From this, a curriculum is designed revolving around a series of carefully planned experiences to bring about cognitive growth.

Curriculum design based on experimentation with activities derived from Piaget's developmental theory.

How curriculum designed and organized

First task--the delineation and sequencing of goals

1. Select broad cognitive areas in Piaget's theory on basis of relevance to preschool education.
2. Describe major developmental stages within broad cognitive areas.
3. Conceptualize educational implications of these stages.
4. Formulate short-term teaching goals to major goals (step 2) in light of educational implications (step 3).
5. Describe in detail at least one teaching activity for each goal (step 4) as an example of how to reach that goal.

Home visits made by teacher

1. to conduct individualized tutorial sessions with the child
2. to involve and instruct mother in educative process.

Aide accompanies teacher to work with other children in family while teacher instructs child.

c. Instructional content

Cognitive--A Piaget-derived curriculum was employed.

Two aspects of knowledge.

A. The Operative Aspect (mental operations)

1. Logico-mathematical operations
   a. Classification
   b. Seriation
   c. Numbers

2. Spatio-temporal operations
    a. Spatial relationships
    b. Temporal relationships

B. The Figurative Aspect (symbolization)

1. Objects

2. Indices

3. Symbols
    a. Imitation
    b. Make believe
    c. Onomatopoeia
    d. Recognition of pictures
    e. Making clay models and drawings

4. Signs

In symbolic activities, the child progresses from concrete objects to parts of objects, to the imprint or sound made by an object, to word representing object.

Inner control development through use of Skinnerian behavior modification techniques.

Language patterning was taught by a modification of Bereiter's method.

Language taught for language (not cognitive) development.

Based on Piaget's view of role of language in cognitive development.

Parent curriculum same as for children.

A program involving parents themselves is also used to get to the children. It focuses on internal control and cognitive development.

Parents are taught to use Skinnerian behavior modification techniques in controlling children.

6

Parents are encouraged to observe and participate in educational process.

Parents taught techniques by which commonplace household and play activities can be utilized to reinforce classroom goals.

Curriculum was experimental first year.

As things were tried and found to confuse or be uninteresting, they were modified or discontinued.

d. Instructional methods and techniques

Are being developed as program progresses.

Children are trained in mental operations by allowing them to perform physical operation on objects first (sensory-motor stage).

Socio-dramatic play (as used by Smilansky) used to promote symbolic functioning.

In learning spatial and temporal concepts, children physically move over and under a table, or inside and outside a box and thus build up concepts.

Use is made of a modified version of the Bereiter-Engelmann program of patterned language drills.

Purpose of language segment is not cognitive development but concept development and retrieval.

Pattern drill not used to teach concepts but to help children use concepts they already have acquired through a non-verbal, sensory-motor program.

Skinner's modification techniques are used in the parent program.

Children are given choices in their activities, but made to stick to them.

e. Instructional materials

No data available.

III. Delivery System

a. Organization of learning environment

Each classroom contains ten children, one teacher, and one aide.

Fifty attend in the morning, fifty in the afternoon.

Each child is also visited in his home every other week by his teacher who conducts a tutorial session, lasting about one and one-half hours, while mother present.

Purpose

1. to involve mother in educative process so that she may incorporate role of teacher

2. to meet child's individual cognitive needs.

b. Pre-service and in-service procedures and materials

Orientation program at beginning of year, three weeks; quite extensive, covering the background of the project and its purposes to actual teaching methods.

An on-going in-service training program

Weekly.

Four curriculum supervisors meet to review progress of children and teachers and decide upon goals for next week.

Goals presented to teachers at weekly meetings.

Continual interchange between teachers and supervisors over specific teaching activities used.

IV. Evaluation System

a. Evaluation instruments and procedures

Each year for three years.

Sample

one hundred four-year-old disadvantaged children

fifty white; fifty black
fifty girls; fifty boys

and their parents.

Development of diagnostic tasks was a goal of program.

Two types were used

1. Standard experimental tasks devised by Piaget (administered in November and May).

2. Tasks developed by curriculum supervisors and administered bi-weekly by teachers.

   Composed of several tasks for each concept taught at various levels of representation.

Diagnostic evaluations are strictly experimental--not yet standardized!

Evaluation of curriculum

Submitted to authorities in field of early child development and to experienced preschool teachers outside of program.

Also offered to other programs to be implemented and evaluated.

Evaluation of technique for achieving curriculum innovation in a school system

Trained observers will be employed to observe on-going program to determine extent of utilization of new material.

Detailed questionnaire rating scale developed.

Teachers interviewed periodically by outside people.

Evaluation of effect of the preschool program per se

A. Effect on children

1. In cognitive development

   The short-term effect will be determined using the Stanford-Binet Intelligence Scale (SBIS) and Peabody Picture Vocabulary Test (PPVT).

   Administered to all one hundred children at beginning and end of program each year.

   Statistical techniques:
   - t-tests
   - analysis of variance
   - etc.

   Change scores of all participants each year (and relevant subgroups) will be compared with change scores found in other programs in Ypsilanti.

   Long-range effect on children's cognitive development will be determined using SBIS and PPVT.

   Will be administered to a stratified sample of twenty-five each year (kindergarten, first, second).

   Appropriate statistical tests of significance of difference will be made of entire sample (and of relevant subgroups within sample).

2. In peer and adult relations, academic motivation and classroom conduct.

   Short-term effect determined by having teachers and aides complete Pupil Behavior Inventory (PBI) for all subjects before and after program each year.

   Relationship between cognitive growth and academic motivation, classroom conduct and peer and adult relations will be explored.

Long-term effect on peer and adult relations, motivation, and conduct will be determined by having the kindergarten and first grade teachers of the twenty-five in each year's sample complete PBI at the end of each school year.

Scores will be compared with ratings of an equal number of non-disadvantaged children in the class matched for sex and race.

B. Effect on parents

1. General effect will be determined by administering a short form

   a. of the Parental Attitude Research Instrument (PARI) to mothers of children at beginning and end of program; this instrument measures maternal child-rearing attitudes.

      Change scores will be analyzed to determine if a shift has taken place; relationship between shifts in mother's attitudes and child's cognitive growth will be analyzed.

   b. of the Cognitive Home Environment Scale (CHES) each year at beginning and end of program; this instrument is an adaption by Radin and Weikart of Wolf's Environment Process Scale to be meaningful with lower-class parents. It measures the degree of cognitive stimulation found in the home.

      Relationship between initial CHES scores, initial IQ's and other variables (e.g., mother's education, number of children, etc.) will be explored.

A subjective and objective evaluation of parents' growth in ability to foster internalization of control and motivation to achieve will be made, using an open-ended questionnaire on child management administered at start and end of school year.

Home observations of M-C interaction.

Sample--twenty mothers completing questionnaires
When--fall and spring

2. Also, effect of three types of parent-education groups

change scores on PARI, CHES, the open-ended questionnaire on child management and home observations of the three groups of mothers will be compared.

Appropriate tests of significance will be used to determine most effective technique of working with parents.

Parent program

Design

Built into the parent program to test its effectiveness.

Three groups of parents, matched on critical independent variables and willingness to participate.

One group is the control and is not involved in any meetings.

Other two serve as treatment groups, each presented with same content in different ways.

Two treatment groups are divided into small discussion groups (10 each) who meet weekly with social worker in a school or community center.

Instructed in behavior modification techniques and methods for fostering cognitive growth at home.

Two modes were used for instructing parents

1. Lecture Approach (typical)

2. Participation Approach (parent actively engages in some aspect of program).

b. Research and technical support data (as of April, 1968)

Appears that Lecture Group of parents are as involved in program as Participation Group!

Effectiveness of approach varied with content of sessions.

Participation approach may not be equally suited to all types of content.

Verbal interaction seems sufficient.

A different approach in instructing parents seems necessary.

Final results not yet available.

EEP based on 1967 Gale Preschool Program results (1966-1967)

Evaluation instruments and procedures

Sample

Twenty disadvantaged four-year-olds.

Treatment

Same as used in Early Education Program (except there was no parent program).

Instruments

Stanford-Binet Intelligence Scale
Pupil Behavior Inventory
PPVT

Results

Mean gain on SBIS was 13.7 points.

Pupil Behavior Inventory interest in academic affairs increased significantly.

Parents increased amount of education they felt their children must have, amount of schooling they expected their children to receive, and the educational materials available in home.

Parents lowered expectations as to grades.

Surprising finding

The best predictor of gain in IQ (49% of variance) was a factor on the PBI, pertaining to the dependency of the child.

Dependency on teacher and need for constant reassurance correlated highly (positively) with IQ gain.

Conclusions

Dependency is an asset for young disadvantaged children who are likely to be alienated and distrustful of adults.

Possible that orienting oneself toward adults and perceiving them as reinforcing agents is an important precursor for cognitive growth among preschoolers from low-income homes.

Follow-up in August, 1967

To determine stability of gains.

Gain PPVT held up.
6.4 drop on Binet.
Item analysis revealed greatest drop in areas requiring abstract concepts.

Conclusions--teaching verbal and perceptual skills is easier than teaching concepts.

V. References

Radin, Norma. Piaget, Skinner, and an intensive preschool program for lower class children and their mothers. February, 1968. Educational Resources Information Center, Document Number ED 027 966.

Kamii, C., and Radin, N. The Ypsilanti Early Education Program. November, 1967. Educational Resources Information Center, Document Number ED 022 531.

Program Title: Amelioration of Learning
Deficits Program
(Begun 1965)

Principal Investigators or Developers:

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Address: Research Program on Preschool
Disadvantaged Children
Institute for Research on Exceptional Children
Department of Special Education
University of Illinois
Urbana, Illinois

Sources:

Karnes, M., et al. A comparative study of two preschool programs for culturally disadvantaged children: A highly structured and a traditional program. Interim report. 1966. Educational Resources Information Center, Document Number ED 016 524.

Karnes, M., and Hodgins, A. The effects of a highly structured preschool program on the measured intelligence of culturally disadvantaged four-year-old children. Interim report. 1967. Educational Resources Information Center, Document Number ED 019 116.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Seven month program for four-year-old children, two and one-fourth hours per day, five days per week. This program is aimed at compensating for the effects of early deprivation, to ameliorate learning deficits accruing from such deprivation, and to accelerate the rate of growth in areas that will enable disadvantaged children to cope more successfully with later school tasks (cognitive development).

Thus, the emphasis is primarily deficit-filling rather than developmentally-oriented.

It is a highly structured program based on psychological theories.

The goal is to develop the basic language process as well as to teach specific content in the areas of mathematics, language arts, social studies, and science.

Since language is the area of greatest weakness among these children, the development of language skills was a basic goal throughout the curriculum.

Because disadvantaged children seem to profit from educational experiences less well than their peers from more favorable socio-economic backgrounds, special emphasis is placed on helping them process information.

There is no specific concern being directed toward social or emotional development, but rather academic achievement (cognitive growth).

b. Data oriented rationale

The content areas of math, language arts, and reading readiness, and social studies-science were chosen as the most directly related to early elementary curricula.

Failure of culturally deprived to develop their capabilities should be viewed from the standpoint of the loss to society as well as from the standpoint of its effect on the individual.

Our culture predisposes disadvantaged children to find school difficult, to lack self-confidence, to have low self-concept, and to be generally alienated from the mainstream of our culture.

Research has provided descriptions of the rather specific learning deficits of these children.

The disadvantaged score lower on intelligence tests.
There are gaps in the knowledge and learning of these children.
They are deficient in listening skills, in visual and auditory perception, and have short attention spans.
They have inadequate language development of a formal nature.

Generally agreed that best way to combat poverty and the cumulative effects of cultural deprivation is through education.

Ausubel: "The possibility of arresting and reversing the course of intellectual retardation in the deprived pupil depends largely on providing him with an optimal learning environment as early as possible in the course of his educational career."

Thus, the necessity of preschool programs for the culturally disadvantaged.

Ameliorate learning deficits before they become established.

The longer the intervention is delayed, the greater the impact of the deficient learning environment is on the cognitive development of the disadvantaged.

By the time of adolescence and early adulthood, it is almost impossible to make up these losses in learning.

Research has demonstrated the positive effects of preschool attendance on the growth of these children with special problems.

Question now (1966): What approach to preschool education will promote the greatest growth in disadvantaged children?

Shortcomings of past research.

Many programs not set up on a research basis or old enough to be evaluated.
Few have included both Negro and Caucasian with a wide range in intelligence.
Much has focused on exceptional children with mental or physical handicaps.
The effects of programs have been assessed in terms of changes in measured intelligence only, rather than changes in a number of crucial aspects of development related to learning.

From 1925 to about 1939, studies on the effects of preschool education were disappointing; nothing conclusive was arrived at.

One of shortcomings of early studies was that researchers often failed to maintain a control group matched on certain crucial variables; usually they did not consider the education, intelligence, and socio-economic status of the parents; matching pupils merely on the basis of IQ does not insure homogeneity; conditions during the testing were not always comparable.

Treatment programs were not always described in adequate detail.

Differential gains often caused by fact that testers were often well known to experimental group but unknown to control group.

Studies not generally longitudinal to determine if gains were permanent.

Merely changing the learning environment could cause IQ gains.

By the 1940's, need for studies investigating relationship between aspects of a preschool program and IQ changes.

In 1946, Wellman and McCandless studied various facets of a program seemingly related to IQ gains, but results inconclusive.

1951, Herrick found IQ scores of children of unskilled laborers to be from fifteen to twenty-five points lower than those of professionals.

1945, Janke and Havighurst, using Warner's scale of economic status, found similar results.

Other studies, such as Havighurst and Breese in 1947; Manley in 1963; Hindsley in 1961, and Migliorino in 1960, found a significant relationship between socio-economic status and intelligence scores.

Kirk, in 1958, conducted a study using an experimental and control design which involved a special program for preschool disadvantaged children (ages three to six) with IQ's between forty-five and eighty; the overall gains of the two experimental groups over the control groups were statistically significant. Need for testing other methods of accelerating the rate of mental growth of the 30 percent who failed to profit from program.

Gray and Klaus (1963) studied effect of early training on preschool culturally disadvantaged children.

> Purpose: Offset the progressive retardation commonly observed in schooling of these children.
>
> Attempted to promote motivation for achievement, to stimulate language development, and to provide experiences which would encourage child to order and classify objects and events in his world.
>
> Training lasted fifteen months.
>
> Results: Greater improvement for experimental groups on Stanford-Binet and Peabody PVT. Control groups decreased.

Weikart (1964); Perry School Project

> Purpose: Compensate for mental retardation associated with cultural deprivation.
>
> Cognitively oriented morning program using instructional method he calls "verbal bombardment."

Parents were involved.

Controls stayed at home; no preschool, no home visitations.

Results: Findings on PPVT suggested a preschool program does promote development of "verbal intelligence"; at end of kindergarten year, subjects given Gates Reading Readiness Test on which experimental subjects tested higher than control on all five of subtests; however, only two reached statistical significance.

J. O. Smith (1962) designed a program involving three forty-five minute periods a week of intensive remediation to eight mentally retarded children; included thirty-three sessions; program based on the nine areas assessed by the ITPA.

Results: Experimental group gained in mean language age and control group decreased.

Follow-up study a year later showed no statistically significant differences between two groups on ITPA.

Weaver's preschool program designed to accelerate language development (1963) produced significantly higher scores on the Visual Decoding and Auditory-Vocal Association subtests of ITPA.

From past research, Karnes (et al) made the following decisions about the program design to use.

1. Both the comparison and experimental groups had treatment programs. Earlier studies usually provided no treatment program for the control subjects.
2. Changes in a number of variables were investigated. Earlier studies concentrated primarily on IQ changes.
3. This study is longitudinal in nature, in contrast to earlier short-term studies.
4. The subjects of this study were not chosen from a narrow range of intellectual ability as has been true of many earlier studies.

5. Most earlier studies with culturally disadvantaged children have used the ITPA as an achievement test. This study uses the ITPA as an achievement test and as a diagnostic instrument.

6. The instructional program has been recorded and can be replicated.

7. Both Negro and White children made up the subject population.

8. Parent involvement was kept to a minimum to enable a more precise evaluation of the instructional program.

c. Developmental theory

Program based on belief that the intellectual and motivational stunting of early cultural deprivation can be reversed by supplying proper experiences in a nursery school for three-, four-, and five-year-olds.

Children increase in their cognitive abilities and become more motivated if they receive the right stimulation, at the right time, in the right amounts.

Children from culturally deprived homes may be environmentally stimulated to a great extent, but such stimulation is inconsistent, inappropriate to the child's needs, and not directed toward learning in a way that is interesting, worthwhile, and rewarding.

Karnes doesn't provide us with a theory as to how these children learn.

Merely points out that they were not properly "stimulated" at the right time.

Why they should be stimulated in any particular way is not made clear.

d. Instructional theory

Karnes' program based on an instructional theory which doesn't appear to be an outgrowth of any specified developmental theory.

First task: provide stimulation for intellectual growth.

Environment of optimal learning conditions requires a program which is highly structured.

No point in relying on incidental learning if one knows the conditions which best promote acquisition of desired skills.

Learning activities must be designed to be appropriate to the present cognitive structures of the child and also the activities must develop these structures even further.

Proper stimulation includes enough opportunities to repeat newly acquired responses so they will become established (frequent review).

Transfer of training

Requires detailed and precise mapping of the content areas within which skills of reasoning and thinking are taught.

Scheduling learning activities in content areas to overlap and extend each other demands a highly structured curriculum.

Curriculum must be minutely specified if adequate repetition and conditions facilitating transfer are to be included.

Second task of educators

Developing motivation.

Optimal achievement requires optimal motivation.

Modern experimental research and learning theory have refined notion that "nothing succeeds like success."

Importance of immediate feedback well known.

Child should know at once the correctness of his responses.

For difficult material, then, provide child with numerous opportunities to be successful.

This requires a highly structured curriculum in which responses are carefully sequenced.

Reinforcements may include recognition, reward, and commendation; later, these may operate to make learning itself highly rewarding.

Teacher-child interaction

Must be firm but pleasant.

Ignore undesirable behavior when possible and reward desirable behavior.

Punishment accomplishes little and may be detrimental.

Language development

Because it is here that disadvantaged children show greatest deficit, instructional program places heavy emphasis on remedial and developmental language activities.

Model: from Osgood, modified by Kirk and McCarthy.

Analysis of psycholinguistic abilities from three dimensions.

1. Levels of organization
2. Psycholinguistic processes
3. Channels of communication

Osgood's language model

1. Levels of organization depict functional complexity of organism.
    a. Automatic-sequential level mediates automatic linguistic habit-chains.

b. Representational level is concerned with the meaning of linguistic symbols.

2. Psycholinguistic processes are subdivided into decoding, encoding, and association.

3. Channels of communication describe the sensory-motor path by which linguistic symbols are received and produced.

Avenues of reception chiefly involve visual and auditory channels while motor and vocal channels are major avenues of response.

The relationship between the teacher and the child is considered of utmost importance in securing optimum motivation and in providing maximum opportunities for transfer and reinforcement of learning.

II. Instructional System

a. Performance objectives

Improved language skills.

Acquisition of basic concepts in mathematics, language arts, social studies, and science.

Improved general intellectual functioning; improved IQ's as compared with peers of higher SES.

1966 and 1967 Studies

Improved intellectual functioning as measured by 1970 Stanford-Binet, Form L-M.

1966 Study

Psycholinguistic abilities improved as measured by ITPA.

Improved vocabulary comprehension as measured by PPVT.

1966 Study (continued)

Improved perceptual development as measured by Frostig Developmental Test of Visual Perception.

Progress in school readiness as measured by MRT.

b. Instructional organization

Principal focus of daily schedule was upon three structured learning periods devoted to the teaching of math concepts, language arts and reading readiness, and social studies-science.

The math, language, and reading curriculums stressed specific skills and content, while the social studies-science curriculum was organized on the basis of units which followed the school calendar.

Highly structured. All activities are carefully programmed to ameliorate specific deficits of disadvantaged child in learning as well as in basic motivation.

Osgood's model of language processes serves to help teachers devise appropriate remedial and developmental language activities.

Teacher's language also serves as a standard.

Diagnostic profile (ITPA) helps teacher become aware of the language processes which can be developed through a given task; helps to identify responses to be elicited from pupil; profile encourages teacher to re-evaluate from time to time, child's strengths and weaknesses and modify activities accordingly.

Differentiation of instruction

Within each group of five.

Different responses may be elicited from each pupil in group, depending on particular needs.

c. Instructional content

Content chosen as most directly related to early elementary curricula.

1. Math

   Stressed useful vocabulary and basic manipulative skills; identifying and naming of five geometric shapes; one-to-one matching; dimensional terms and seriation; counting as a functional concept; introduction of numerals as visual symbols, especially 0 through 5; beginning addition and subtraction, particularly with manipulative objects.

2. Social studies-science

   Body awareness, self-concept.

   Family members and home environment.

   Kitchen science unit--demonstration of simple scientific principles; observation and verbalization of what is seen, heard, tasted and touched; vocabulary--melt, boil, freeze, cool, warm, hot, dissolve, sweet, sour, salty, dry, wet, evaporate.

   Other units--germination of seeds and plant growth; farm animals, wild animals; fruits, vegetables; community buildings, workers; vehicles; weather, seasons; time sense.

3. Language arts and reading

   Vocabulary and language development; labelling, precise verbal observations; generalizing; grammatically correct forms; understand and ask questions; formulate answers; activities to develop fine visual and auditory discriminations and visual-motor coordination.

   Music--used to reinforce content currently being taught.

   Directed play--children are primarily engaged in visual-motor activities (puzzles, nesting and stacking toys, blocks, clay, etc.).

Latitude of three content areas permits emphasis to be given to such processes as inductive, deductive, and divergent thinking.

Presenting tasks that make use of basic processes of language in varied contexts was felt to promote more effective and refined use of the processes and to facilitate learning of content materials essential for developing a broad cognitive base upon which future learnings could be built.

d. Instructional methods and techniques

Basic teaching strategy stresses language development at all times.

In addition, attempt is made to provide for concurrent multisensory experiences particularly during initial presentations.

Initially, a game format is stressed, but all requiring verbal responses.

Later in program, more use is made of mimeographed materials in large, uncluttered form.

Repetition at same level of difficulty (but with varying format) is used to program content because directors believe motivation to learn increases with success.

Small group instruction allows for immediate correction and differentiation of instruction and fosters a high success ratio and the development of intrinsic motivation (immediate feedback).

Frequent review provides opportunities for relevant transfer of new knowledge, especially of vocabulary and sentence structure.

Use is made of multiple copies of inexpensive books to foster reading readiness.

Small group story time provides opportunity for reinforcing and elaborating upon vocabulary previously taught; for sequencing events to show cause and effect and time relationships; for both short and long range recall and memory activities; for making inferences and divergent responses; to expose child to acceptable syntactical models and familiar constructs of the language.

Body exercises are used to develop body awareness and self-concept.

Each teacher kept a daily lesson log of learning activities presented to children in her group and of their responses to these activities.

Also kept anecdotal records on academic progress and behavior patterns of each child.

Such records were felt to help teacher maintain a current perspective of each child and his specific strengths and weaknesses.

Materials, methods, organization of environment all aimed at fostering motivation to learn.

e. Instructional materials

Math

Manipulative objects such as popsicle sticks, bottle caps, poker chips, and peg boards.

Social studies-science

Songs, pre-cut unassembled figures, body outlines of children; pictures from integrated primers, rubber play people, family puppets, clothing cut from catalogues, furniture items cut from catalogues, go-together pictures (such as a foot and a sock).

Language arts and reading readiness

Copies of inexpensive books.

In general

Games--card decks, lotto, models and miniatures, sorting, matching, and classifying games.

Mimeographed materials, large, uncluttered format; teacher-made for most part.

No outdoor play equipment or traditional preschool toys were used.

Crayons, dri-marks, and primary pencils used with mimeographed sheets.

Each teacher given a copy of test results and psychological report of each child.

Many of materials were teacher-made to fit needs of individuals in her group.

Early presentations relied heavily on manipulative and multisensory materials.

General

Instructional materials designed to reinforce, expand, and facilitate transfer of concepts and information in specific content areas and to further diagnose deficits in information and communication processes.

III. Delivery System

a. Organization of learning environment

Children were divided into a morning and an afternoon class of fifteen.

Each class met for two hours and fifteen minutes each day for seven-month program interval.

Classes held indoors.

Each class was divided into three ability groups with one teacher for each group (teacher-pupil ratio = 1:5).

Three small, distraction-free rooms were used plus a larger room where fifteen children could gather.

Daily schedule built around three structured learning periods.

Each of the three rooms had materials appropriate to one of the three content areas.

Each teacher moved from room to room with her group of five children (rather than relying on one large room for all activities).

Each learning period was about twenty-five minutes long.

Children did not change groups for specific curriculum areas, but remained with the same teacher for all content areas, for juice, and for field trips.

Only during music and directed play were children free to form their own peer groupings.

Three, fifteen-minute periods were devoted to music, story period, and directed free play.

b. Pre-service and in-service procedures and materials

No data available.

IV. Evaluation System--1966

a. Evaluation instruments and procedures

Subjects--drawn from preschool population of culturally disadvantaged within communities of Champaign and Urbana, Illinois.

In fall of 1965, sixty children were selected for placement in program on basis of following criteria.

1. Low socio-economic home (based on Warner's Revised Scale for Rating Occupations, 1949) and housing ratings from City Planning Commissioner's Office.
2. Four years old by December 1, 1965.

3. No previous preschool experience.

Placed in two experimental and two traditional nursery school comparison classes of fifteen each. Steps in placement

1. Stratified by level of intelligence into three groups.
2. Within each strata, they were randomly assigned to the four classes.
3. Adjustments made in racial and sexual composition of classes.

Five withdrew; final evaluation based on N = 55; twenty-seven experimental and twenty-eight comparison.

Subjects were described in terms of age, race, sex, socioeconomic status, and intelligence.

Instruments

1. 1960 Stanford-Binet Intelligence Scale, Form L-M, used to assess intellectual functioning of subjects and to identify cognitive strengths and weaknesses in both groups.
2. Illinois Test of Psycholinguistic Abilities (McCarthy and Kirk, 1961), provided basis for comparing total attainments of both groups. Provided means for contrasting relative strengths or weaknesses between and within groups.
3. Peabody Picture Vocabulary Test, to determine level of vocabulary development.
4. Frostig Developmental Test of Visual Perception, to determine level of perceptual development.
5. Metropolitan Readiness Tests, Form R, readiness in reading, number concepts, and total readiness.
6. Templin-Darley Tests of Articulation, aid in curriculum building; not subjected to statistical analysis.

Tests administered on a pre- and post-test basis (except for MRT).

Characteristics of Subjects

	Mean CA	Mean MA	Mean Binet IQ	Race		Sex		Mean Weighted S. E. S.
				W	N	M	F	
Experimental N=27	4.34	4.19	95.96	9	18	13	14	43.07
Comparison N-28	4.33	4.16	95.50	11	17	17	13	42.50
t value	t = .09	t = .21	t = .16					

Constancy maintained in testing environment; examiners did not know subjects' group placement.

Social histories of subjects and families obtained by teachers through structured interviews with parents.

Case conferences held on each experimental child.

Psychological report written on each experimental child by psychologist.

Logs and anecdotal records kept by teachers of both groups.

Detailed reports on individual progress of subjects; summaries of parent conferences.

Treatment period

Program lasted seven months.

Both groups divided into morning and afternoon classes--five days per week for two hours and fifteen minutes per day.

Method of analysis of data

1. Statistical analysis of data

   t test; two-tailed tests of significance used on pretest data, and one-tailed test on post-test data and net gains ($.05\alpha$).

2. Incorporation of data in a case study approach.

b. Research and technical support data

Preliminary findings of five-year longitudinal study of program (1965-1970).

H_0: Four-year-old culturally disadvantaged children participating in a highly structured pre-school program designed to ameliorate deficits and accelerate their rate of growth in areas important for later school success will show progress significantly superior to that of comparable children participating in a traditional nursery school program.

Results

1. Intellectual functioning

   Experimental subjects showed progress in measured intelligence significantly superior to that of comparison subjects.

   IQ gains of experimental group were statistically superior to those of comparison group at .001 level of confidence (as were MA gains).

2. Psycholinguistic abilities

   Both groups made remarkable but comparable progress.

   E subjects were significantly superior to C subjects on total post-test language age scores. (However, E group initially superior in total language age, even though this superiority failed to reach statistical significance.)

   No significant difference when gain scores compared (both achieved mean gains of fourteen months).

3. Vocabulary development

   Difference between post-test scores of E and C groups was not significant.

   But, difference between gains of two groups showed trend in favor of C group.

4. Visual-perceptual development

   E group scored significantly superior to C group.

   E group not only maintained initial superiority, but enhanced statistical magnitude of this difference ($p < .001$).

   No significant differences were noted between gain scores.

5. School readiness

E group scored significantly higher on tests of school readiness than C group.

Conclusions

Highly structured program; (Karnes) appeared to be more effective than a traditional nursery school program in

accelerating intellectual functioning
perceptual development, and
readiness to cope with school tasks

Instructional model is seemingly effective in helping educators select appropriate ameliorative and developmental learning experiences for disadvantaged children.

A sequential program in visual perception seemingly promotes accelerated development of these children.

Highly structured program fosters school readiness, verified by gains on Binet intelligence scale.

IV. Evaluation System--1967

a. Evaluation instruments and procedures

In fall of 1966, thirty children were selected for program on basis of following criteria.

1. Low socio-economic level home.
2. Four years old by December 1, 1966.
3. No previous preschool experience.

Mentally retarded and those with gross physical handicaps were excluded from sample.

IQ's of children (1960 Stanford-Binet Individual Intelligence Scale

Form L-M) ranged from seventy-eight to one-hundred thirteen.

Relatively equal numbers of boys and girls chosen.

Ratio of Negro to White (2:1) reflected ratio in low SES segment of community.

b. Research and technical support data

End of seven-month program interval IQ rose from 95.96 to 110.26, a gain of 14.30.

Before program 29 percent occupied the low average range and no child fell in superior range.

Conclusion of program, no child remained in low average range while 22 percent tested within the superior range.

Low average	89 and below
Average	90 - 109
High average	110 - 119
Superior	120 and above

No child regressed and only one child made a gain below five points.

More than half gained from ten to nineteen points (gains greater than those reported by most studies involving same preschool interval).

Negro and White children made very nearly equal gains.

Scores indicated that children in higher range did not benefit as much from this program as did children in the average and lower ranges of intelligence.

In summary

During the seven-month interval, children markedly improved their level of intellectual functioning and increased their relative intellectual standing among peers from a more favorable SES.

Program designers feel these children are better equipped to cope with the tasks of the first grade as result of participation in program.

Appears that such a structured program of preschool learning is effective for preparing disadvantaged children.

V. References

Karnes, M., et al. A comparative study of two preschool programs for culturally disadvantaged children: A highly structured and a traditional program. Interim report. 1966. Educational Resources Information Center, Document Number ED 016 524.

Karnes, M., and Hodgins, A. The effects of a highly structured preschool program on the measured intelligence of culturally disadvantaged four-year-old children. Interim report. 1967. Educational Resources Information Center, Document Number ED 019 116.

Program Title: The Diagnostically Based Curriculum
(1964-1967)

Principal Investigators or Developers:

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Source:

Diagnostically Based Curriculum, Bloomington, Indiana: One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 978.

PROGRAM SUMMARY

I. Program Foundation

a. Prescriptive and assumptive conditions

Program aimed at developing and evaluating a diagnostically based curriculum for disadvantaged preschool children.

Diagnosis attempted to identify the child's learning deficits in language, concept, and fine motor development in order to apply to each child specific remediation procedures.

Goal was development and remediation of specific cognitive, psycho-motor, and social behaviors.

Population consisted of 139 Appalachian white and four Negro children from families of lowest SES; five years old; IQ's between 50 to 85 (1960 S-B LMIS).

Study lasted three years, with a new group of five-year-olds entered each year.

Instruction was daily, from 9:00 a.m. to 1:00 p.m.

Program had following aims

1. Identify and where necessary develop or adapt techniques and instruments useful in preschool diagnosis and that lead to productive curriculum practices.
2. Obtain data concerning effective use of selective diagnostic tools in curriculum development for children with specified strengths and weaknesses in certain cognitive and affective areas related to school achievement and adjustment.
3. Develop and refine curriculum strategies for five-year-old psycho-socially deprived children for purposes of preventing future mental and educational retardation.
4. Evaluate the effectiveness of the diagnostically based curriculum strategies in terms of purposes stated above.

Three groups were involved each year

EPS	Experimental Preschool
KC	Kindergarten Contrast
AHC	At Home Contrast

b. Data oriented rationale

Program based on constant diagnosis of children's deficits through tests and observations. Results are incorporated into the program's structure and operation.

Lessons were designed on basis of on-going assessment of child's performance level; in other words, the program didn't evolve primarily out of assumptions about children, but rather their actual deficits.

Specifically

Reading depends on adequate oral language.

Fine motor coordination is essential to writing.

Gross motor skills necessary for socialization activities.

Disadvantaged preschoolers in the programs lacked ability to use elaborative language, and labels for uncommon objects and things seldom encountered in their familiar environments.

Elaborative, representational language is necessary for the development of symbolic thought, verbal mediation, and later school success.

c. Developmental theory

Intelligence is modified by experience.

d. Instructional theory

Teachers were child-oriented, not content-oriented.

Each teachable moment was utilized.

Concepts should be demonstrated to children and not just verbally explained.

II. Instructional System

a. Performance objectives

Gains in cognitive and affective skills

1. Improved language skills
2. Improved fine motor coordination
3. Improved concept formation
4. Improved socialization

b. Instructional organization

Social and emotional development

Each year, a six-week period at beginning of school year (socialization phase) was used to help children learn to accommodate to and cope with their teachers, testers, observers, and themselves.

Overt affection manifestations were gradually introduced.

Male assistant teachers were employed for second and third year studies to compensate for novelty of males in testing situations.

Language development

Assumed language (oral) was basic to concept formation and reading readiness.

Two strategies used

1. Daily formal language period consisting of structured diagnostic language lessons.

2. A series of ancillary language activities designed to reinforce lesson objectives and provide opportunities for transfer of language skills.

Motor Development

Daily formal motor development lessons were taught by physical education graduate student.

Series of ancillary motor activities designed to reinforce motor lessons were also incorporated into daily program.

Formal motor lessons emphasized fine motor development.

A daily physical education period gave program students opportunities for gross motor development.

Typical Daily Class Schedule

9:00 - 9:30	Formal Language Lesson
9:30 - 9:45	Directed Activity (practice following language lesson--self-help activitiy, working with puzzles, coloring work)
9:45 - 10:00	Snack Time
10:00 - 10:20	Story of the Week
10:20 - 10:40	Gross Motor Activities
10:40 - 11:00	Formal Motor Lessons (fine motor activities)
11:00 - 11:10	Sharing Time (ancillary language)
11:10 - 11:30	Directed Play (purposeful participation and leading on part of teachers)
11:30 - 11:45	Music (ancillary language)
11:45 - 12:00	Clean up (getting ready for lunch
12:00 - 1:00	Lunch (wind-up of day's activities)

c. Instructional content

Curriculum was designed to accomplish two goals: promoting personal-social adjustment to group learning experiences, and cognitive development within a formal teaching-learning structure.

Content included language instruction, training in gross and fine motor development, and activities to promote social and emotional development.

Investigators and others made regular observations of the EPS groups--used to develop diagnostically based curriculum.

d. Instructional methods and techniques

Social Development

Firmness, politeness and consistency used.

Taught to take turns, to call teacher and aide by name, to brush teeth after meals, to clean themselves, to answer questions in complete sentences, to use "please" and "thank you."

Discipline was mild reprimand or "time out," for EPS and KC groups (physical discipline was never used).

Mostly for EPS groups, tangible rewards were used during early part of year; these were always accompanied by verbal rewards such as approbation, praise, expressions of appreciation, and (as soon as desired) physical gestures of reassurance and affection. This was a general application of "behavior shaping" and "conditioning to secondary reinforcement" theory and practice. (Demand for tangible rewards diminished by end of year.)

Training given in listening, planning, concentration, delay of gratification, and working for satisfaction of working.

Appropriate patterns of reinforcement were worked out for each child, for special groups, and for total group.

Self-Concept Development

Colored photographs of all children were taken early in year and mounted; children learned to identify themselves and each other.

Full-length mirror helped develop body concept and concern for grooming; also used dressing table with mirror.

"Guess Who" game used.

Children drew silhouettes of themselves and others; asked to identify them as wholes and with parts missing.

Children given experience with small figure drawing.

"Muscle Club" formed for boys (and some girls).

Regular reviews with each child were made of concrete examples of his work; child could see kind of improvement he had made and be reinforced for his efforts.

Assessment Instruments

Medical-physical

- Optometric
- Psychiatric
- Neurological
- Pediatric

Pre- and Posttest Measures of Cognition

([a] used to formulate diagnostic curriculum plans as well as provide measure of change.)

[a]Stanford-Binet, Form L-M
PPVT
Raven's Progressive Matrices
Goodenough Draw-a-Man
[a]ITPA
Lincoln-Oseretsky Motor Development Scale
San Francisco Inventory of Communicative Effectiveness
Caldwell Preschool Inventory
[a]Frostig Test of Visual Perception
Optometric Evaluation
Articulation
[a]Columbia Mental Maturity Scale

Demographic Data

1. Warner-Meeker-Eell's Index of Status Characteristics
2. Wolf Interview Form

Achievement Measures

- Eight-Point Reading Scale
- Teacher Paired Comparison
    - a. Number Skills
    - b. Reading Skills
- California Achievement Test
- School Report Card

Affective Measures

- Teacher Paired Comparison on:
    - a. Personal-social Adjustment
- Sociometric
- Task Involvement Scale

Some measures were used for screening pupils, some for pre- and posttest measurements of change over the period of intervention, some for diagnostic curriculum purposes, some for follow-up information, and others for a combination of these purposes.

Language

Study I

Pretest - ITPA

Used by language consultant to diagnose deficits and to design sixty-eight language lessons for EPS children.

Results of testing and observations lead to dividing children into two groups of about eight each for formal instruction.

First group	high-vocal
Second group	low-vocal

Low-vocal group received an instructional core that stressed expressive (encoding) aspects of psycho-linguistic skills.

High-vocal group received lessons requiring association and attention--concentration skills.

Attempt made to individualize the instruction by providing specific directions for each pupil within the lesson.

Three methods used

1. response elaboration
2. verbal definition
3. verbal feedback

Response elaboration: two methods used

First involved labeling activities in three steps: children labeled or named the object; children identified salient features of object he was labeling; children discriminated vocally between similar objects on basis of structural or functional characteristics, and categorized dissimilar objects according to some common feature.

Second method dealt with length and completeness of verbal responses. Through feedback, direct questions, and supplying a model response, teacher attempted to build from one-word responses and sentence fragments to complete sentences.

Study II

Language program differed from first year in some ways.

Greater continuity was attained from one lesson to another by embodying the lessons in units that related to other on-going class activities. New material introduced by using and consolidating the old and familiar.

Rest of program same as first study.

EPS children, however, received twice as many formal language lessons as Study I children.

Beginning of each lesson used to check what children already knew and to consolidate previous gains they had made.

Old words and concepts related to new ones.

Time orientation provided by review and transition activities.

Discriminations and generalizations were interwoven with games and familiar objects.

Teacher and aide served as models and reinforcers.

Study III

Two correlated language development programs were developed in third year.

Response elaboration and verbal feedback continued to be used.

Series of new lessons developed using thematic approach of Study II and incorporating the expressive language and concept formation elements of Study I.

Revised later (lessons were non-directional and included too many objectives within a single lesson).

Revised program directed at: detecting and correcting language disabilities; introducing the basic structure of expressive language to the learners; making basic language structures habitual for the learners; and, using basic language structure to deal with naturally occuring events.

Series of psycho-linguistically oriented lesson plans developed.

Helped in identifying specific language deficits; provided flexibility in varying the level of difficulty; permitted correlation with core of other activities.

Stress in formal language sessions was placed on teaching polar and non-polar discrimination (e.g., long-short, black-white, up-down) and production of statements incorporating these discriminations.

Ancillary Language Activities

Sharing Activities--Objectives were to: stimulate more adequate ability to talk to a group; encourage better attention in group situations; and, develop memory for ideas presented in group situations.

To develop ability to talk to group, "grab bag" game was played; objects drawn from bag and then described by children.

To develop concentration and memorization skills, children were encouraged to recall experiences from activities which took place previously.

Record chart kept on blackboard to illustrate children's progress.

Story of the Week

Included to extend children's acquaintance literature, improve their ability to listen attentively to a story, and to develop skill in retelling a story in sequential order.

Activities of week revolved around the story.

Culmination of week's activities was a dramatization of the story by the children.

Field trips

Used, for example, in introducing a unit on farm animals.

Carefully structured; involved two days of preparation, including use of pictures and models, records of sounds, farm stories, songs and games.

Post-trip sessions included films and discussions.

Snack and Lunch Time

Used to extend vocabulary and develop number concepts.

Teacher or aide sat with children.

Developed use of polite conversation.

Color recognition and taste discrimination were practiced by varying juices served; size, shape, and number concepts reinforced by offering a variety of snacks, etc.; a number of concepts were taught by focusing on the content of the meals.

In general, teachers used every opportunity to increase the number of ancillary language experiences during day.

Motor Development

Kephart Perceptual Motor Development Scale used to measure gross motor facility (static balance, dynamic precision, etc.).

Lincoln-Oseretsky Motor Development Scale was used to measure fine motor facility (finger speed, arm steadiness, arm and hand precision, and finger and hand dexterity).

Studies II and III placed more emphasis on development of fine motor skills.

Children divided into two groups of about eight each for daily formal instruction in fine motor skills.

Lessons based on test results and observations.

Activities included maze tracing; coloring, cutting and pasting; placing dowels in peg boards; tracing and copying stencils; manipulating snaps, hooks and eyes, buckles, buttons, and modeling clay-- sequenced by level of difficulty.

Separate daily physical education period gave EPS children chance for gross motor development.

e. Instructional materials

Materials consisted primarily of standard play and instructional items used in traditional preschools.

Used, however, in ways that aimed at development and remediation of specific cognitive, psycho-motor, and social behaviors.

Materials chosen to carry out lessons as designed by curriculum committee; not ends in themselves.

III. Delivery System

a. Organization of learning environment

Children in groups of fifteen each and in subgroups of about eight for formal language instruction.

Personnel included principal investigators (Ph. D's), project coordinator, reading specialist, classroom teachers, teacher aides, graduate assistants, (on a consultant basis) project social worker, speech therapists, optometrists, physicians, and curriculum specialists in music, art, and physical education.

Curriculum committee's schedule included weekly meetings, individually arranged weekly observations of EPS class, less frequent observation of KC class, and special training sessions with EPS teacher.

With a teacher aide, T-P ratio was about 1:8.

Substantially the same as most traditional preschools; environment not unique in its organization; not instrumental.

b. Pre-service and in-service procedures and materials

Attention was given to training the teachers involved.

A curriculum committee used techniques which included verbal explanations, direct observations of the children, and role playing by the teacher with certain members of the curriculum committee.

Teachers were trained to focus on the child, not the content.

Efforts were made to improve the teacher's diagnostic evaluation of the children's performance.

Constant interaction was maintained between the teachers and the curriculum committee.

Weekly sessions included diagnostic study, formulating specific lesson plans, and evaluation of progress.

Methods were demonstrated to teachers which proved a valuable approach to improving teacher effectiveness.

IV. Evaluation System

a. Evaluation instruments and procedures

Each study was analyzed separately.

Data then combined to produce larger numbers in the treatment groups and analyzed again.

Gains were quite similar for all three studies and therefore combined tests results sufficient.

Instruments

Stanford-Binet	IQ gains
Columbia MM	IQ gains
ITPA	language development
PPVT	language development

Design

EPS	Experimental Preschool
KC	Kindergarten Contrast
AHC	At Home Contrast

Ho: EPS program was designed to effect greater gains in cognitive and affective areas than a more traditional program or no kindergarten at all, and to maintain them.

Statistical Test

Analyses were done by applying a one-way analysis of covariance.

b. Research and technical support data

Results

Achievement

Intelligence

Analysis of the differences between pairs of adjusted means revealed that the EPS groups' combined mean was significantly greater than either the KC or AHC combined mean.

The KC mean was significantly greater than the AHC mean.

Means for EPS children on the CMMS was equal to the KC collapsed mean; but, both groups significantly exceeded the AHC group.

Mean IQ for both EPS and KC groups shifted from about middle of borderline retardation range to the classification of normal for both Binet and CMMS; AHC group remained within the borderline retardation range.

Conclusions

Experimental curriculum was more effective in increasing intelligence than was traditional kindergarten curriculum; preschool year more effective than analogous year spent at home.

Language

On both the ITPA and PPVT tests, the experimental group improved significantly more than the KC, and KC significantly more than AHC.

Intervention more effective for language than for intelligence development.

Gains in language were more relative and absolute.

At post-test, EPS children were performing at about same level in measured intellectual and language skills, whereas at pretest they had been much more retarded in language.

Follow-up testing (1st grade)

EPS and KC seemed to have stabilized in IQ by time preschool year finished; but, AHC children (given school experience) showed gains in IQ of sufficient magnitude to cancel significant differences which formally existed!

EPS children exhibited decelerated progress; KC group maintained progress; and AHC group showed accelerated progress.

Conclusions

Results may indicate that a traditional first-grade program (though capable of maintaining IQ gains resulting from preschool experience) cannot sufficiently challenge these children to capitalize on their previous achievements.

Motor Development

Results of testing indicated that at conclusion of the intervention period

EPS = KC
and EPS & KC > AHC

Personal-Social Adjustment

Measure -- Intensity Task Involvement Scale

Conclusions

(Tentative) the EPS curriculum is associated with more gains in intensity of involvement in teacher-directed tasks than is the KC experience.

Sociometric data from students and comparison surveys from teachers also indicated improvement in social behavior for EPS groups during preschool year.

Modifications and Suggestions Related to Program Design and Operations

Language classes were divided into high- and low-vocal groups.

Children were divided into two groups for fine motor lessons.

Concentration of effort was on fine rather than total motor development.

Language program was redesigned to be more easily adaptable to individual children and have face validity for teacher.

Male teacher aides were added.

Recommendations for future programs

Explain to a teacher the rationale upon which the curriculum is based so she can translate it into practice.

Refrain from packaged language lessons alone--not as effective as combined use of ancillary language activities and structured lessons.

Recommendations

Experiment with diagnostic instruments prior to study to ascertain whether they are sensitive enough to detect deficits in specific areas.

Always consider home environment as a cue to what is effective when attempting to apply motivational devices, rewards and punishments.

Scope of intervention projects should be larger than just innovations in school curriculum (as in present study).

Provide breakfast.

Provide a follow-through program for grades one through three.

V. References

Diagnostically Based Curriculum, Bloomington, Indiana, One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 978.

Program Title: Early Childhood Project
(1962-1968)

Principal Investigators or Developers:

Martin Deutsch
L. S. Goldstein

Address: Institute for Developmental Studies
New York, New York

Source:

Early Childhood Project, New York City: One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 974.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Designed for disadvantaged children, prekindergarten through third grade.

Subjects involved were mostly Negroes, from non-intact families in Harlem.

Concentrated on language development, self-concept, perception, and concept formation.

Aim was to develop very basic skills.

Also, program included a vertically organized series of reading, math, and science (prekindergarten through third grade).

b. Data oriented rationale

Program based on extensive research by Dr. Martin Deutsch and the Institute for Developmental Studies at New York University.

Deutsch began studying intellectual development of disadvantaged children in 1958.

In 1962, he began to translate into action his findings in the form of a demonstration enrichment program for preschoolers.

Children of poor have lives often lacking in richness and diversity.

Traditional curricula planned on assumption that child has already acquired certain cognitive and language skills, but disadvantaged child has had little chance to acquire such skills.

The areas in which the disadvantaged child has been least stimulated by his early environment are language, perception, concept-formation, and self-image.

Program aims at making up for deficits which appear to be most operative in successful school learning.

Early intervention coupled with continuous and appropriately sequenced reinforcement in the grades is important for achievement throughout academic years.

Objectives of program are founded on abilities of individual children rather than stringent goals for each grade level.

c. Developmental theory

Cognitive growth is influenced by the nature of the stimulation of the environment from birth on.

Intellectual development proceeds along a regular sequence of skill acquisition.

d. Instructional theory

Based on research findings, program designed around a logical sequence of activities that will make up for deficiencies.

Each child is allowed to proceed at his own rate.

Based on some of principles of programmed instruction: small steps, sequencing, success, feedback, etc.

II. Instructional System

a. Performance objectives

Improved language skills, self-concept, perception, and concept formation.

In general, IQ's should be significantly higher.

b. Instructional organizations

Each child proceeds through program in small steps (programmed).

Instruction is organized as five "programs": prekindergarten and kindergarten, reading, mathematics, science, and creative dramatics.

Organization reflects Institute's concern for continuity; primary grades were added to preschool program, supervisory responsibility was re-organized on a school basis rather than grade basis, and emphasis was on individual pacing regardless of grade level.

c. Instructional content

Curriculum includes instruction in cognitive areas of language, perception, concept formation, and self-image.

Curriculum undergoes constant revision and refinement.

Reading, math, and science have roots in preschool instruction and are the curriculum bases in grades one through three.

d. Instructional methods and techniques

Language development

Uses partitioned listening centers; children can listen repeatedly to teacher's voice and respond to his questions.

Telephone instruments are used for conversation between children or between child and teacher; required children to use words and not gestures.

Language Masters are used by individual children to integrate visual and auditory stimuli simultaneously; child's response is taped.

Some specific techniques include a Letter Form-Board, Language Lotto (sequenced according to language and conceptual levels).

Self concept

Teachers made point of calling children by name and having children call him by name.

Full-length mirror allowed children to see themselves frequently.

Camera for each room-- each child photographed throughout year (made a photo album to take home). Also helps stimulate language.

Develop

Ability to cope with classroom environment	Feeling of competence	Self-concept improved

Children encouraged to remove, put on, and hang up outer clothing; to get materials by themselves and return them; to learn classroom routines.

Young Negro man visited each class once a week; instructed children in listening to and interpreting the timing and beat of musical records and instruments.

Perception

Perceptual experiences guided by organization of learning environment itself; different activities were concentrated in different parts of room, often separated by partitions. The aim was to eliminate distracting stimuli.

Reading

Prior to grade one, children learned the forms and names of letters and left-to-right order in prekindergarten.

In kindergarten, worked with two-dimensional letters and learned sound of selected letters; sounds were then blended into short words which they learned to read.

Sullivan Readiness in Language Arts Program was added to implement objectives in development of beginning reading skills.

Concept formation

Many activities involved basic cognitive abilities and concept formation.

One method was the use of "Matrix Games," which involved use of classificatory skills

> Board displays a matrix of pictures possessing a number of regularities which children are to discover; children take turns playing "teacher."
>
> Game also develops ability to speak clearly, to follow complex directions, to develop new vocabulary and concepts, and to be an independent learner.
>
> Games used in a programmatic sequence.

Game of "Simon Says" also used; programmed; game moved from simple to more complex.

A calendar curriculum was devised utilizing principles of programmed instruction to teach concepts related to time (weeks, months).

> Each week a one-week calendar was placed on board and X'ed off; after second row added, concept of week was learned, then month. Children had their own individual calendars to mark.

Math

Groundwork laid in preschool through activities involving discrimination, sorting, conserving, matching, etc.

Guided dramatic play

Used across the curriculum as a teaching approach to particular subject areas such as language arts and social studies; also helped to building positive self-concept.

Since disadvantaged children tend to be more motor-oriented than verbally oriented to learning, dramatic play can be a means of helping child to successfully relate himself to the subject matter.

Teacher extends and enriches child's dramatic play through interjecting new role and situation possibilities.

Parents were also instructed in the direction of creative dramatic play.

Child is given much opportunity for practice through games.

More detail about methods and techniques can be found in

New York University Institute for
Developmental Studies. Interim progress
report to Ford Foundation, Part I, November 1967.
New York: New York University, 1967

e. Instructional materials

Many of materials were developed by project's own curriculum specialists.

Materials generally adhere to some important principles of programmed instruction: learners proceed by small steps through a carefully ordered sequence, with success and immediate feedback of results.

Includes materials involving manipulative activities.

Games (for use by individuals or groups).

III. Delivery System

a. Organization of learning environment

Staff included following

one curriculum director
curriculum supervisors (one in each of four schools)
certified teachers (one in each of seventeen classes)
assistant teachers (one per class)
community aides (three)

social worker
subject matter specialists

Room divided up into activity centers by partitions to eliminate distractions.

Objective was to provide prepared activity areas in an orderly atmosphere which would provide perceptual experiences without too much interference.

Parent activity

Each teacher conducted a monthly meeting for parents and emphasized specific techniques parents were to use to support school program.

Parents also encouraged to visit classrooms.

Three rooms were donated by local church for use as a Parent Center. Here, parents met informally to pursue their special interests (i.e., sewing) and learn more ways to help their children; parents encouraged to voice complaints and discuss problems regarding program, and to organize special events.

b. Pre-service and in-service procedures and materials

For new prekindergarten teachers, there was a three-week orientation period before classes began.

Periodically throughout year, all teachers attended workshops and seminars conducted by consultants, outside speakers, and Institute staff.

Objective of in-service training was to sensitize teachers to the situation of their students, and to familiarize them with program's rationale and goals as well as its methods.

IV. Evaluation System

a. Evaluation instruments and procedures

Many measures were used at various times in this program, including the Gates-MacGinities, the WISC, and the Lorge-Thorndike.

However, three tests were used more consistently: The Stanford-Binet, the PPVT, and the CMMS.

Six waves of pupils were tested, one having begun in the program each year 1962-67.

Number of pupils originally in each wave varied between about 120 and 200, including controls.

First two waves were considered to be a pilot study (because grade classes were not very different from regular ones).

Statistical technique most frequently used was analysis of variance.

b. Research and technical support data

First wave--S-B means on post-test at the end of two years of enrichment were significantly better (.01 level) for E's than for C's; the two groups were presumably initially not significantly different on this test (were matched on the PPVT).

CMMS means for E and C groups were not statistically significantly different on pretest, but were (at .01 level) on first post-test, only to become not different again on second post-test.

Second wave--S-B means on pretest were not significantly different for E and C groups, whereas significant differences (at .05 level) were found to exist between the groups on post-test at end of prekindergarten year.

CMMS means were not significantly different for E and C sub-samples on pretest. On first post-test the E sub-sample was significantly better but on second post-test the C group was significantly superior.

Third wave--S-B means were not significantly different for E and C sub-samples on pretest, nor on first post-test.

On PPVT means, however, differences in favor of the E's were shown on post-test (at .01 level) but not on pretest; for CMMS means the reverse was true.

Analysis of S-B scores for each of first four waves

The pretest means of the E and C groups were not significantly different in each wave.

For the second through fourth waves the E groups performed significantly better on first post-test (at end of prekindergarten) when compared with C group.

Significant differences were found when comparing the E's with the C's at the end of kindergarten (second post-test).

Summary

Analyses give strong evidence for effectiveness of E treatment in terms of producing IQ differences in favor of E group at end of prekindergarten period and maintaining these differences at end of kindergarten.

Follow-up in first through third grade

Using the Gates-MacGinities Primary Reading Tests and the Gates Advanced Primary Reading Test, it was found that while the third wave showed significantly better scores for the E's compared with the C's, waves one and two revealed no differences between groups. (Author noted that third wave showed better performance in a skill which the enriched curriculum does not stress.)

Investigators made a study to detect the practice effects of frequent testing using the S-B; comparing sub-samples more frequently tested with those less frequently they found no significant difference.

Tabulating the results of the first wave on the S-B at the end of prekindergarten, kindergarten and third grade, authors found that a comparison of E's and C's showed significant differences (at .05 level) in favor of the E's on each testing.

In a study of MAT scores obtained in the fall of 1966 for children in the first and second waves (then in third and second grade), from E groups only, Goldstein concluded that the long-term effects of the enriched prekindergarten and kindergarten curriculum had not been evidenced in a significantly higher level of achievement for E subjects. (Author noted that waves one and two were pilot groups and received little enrichment beyond end of kindergarten.)

Parent response to program has been excellent - requested continuation.

Modifications-- for 1968-1969

Increase scope of curriculum and methods assessment.

Strengthen curriculum through intensive study of present content.

Deepen the analysis of teaching strategies and classroom management.

However, basic program was continued in 1968-69.

V. References

Early Childhood Project, New York City: One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 974.

Program Title: Accelerating Intellectual Development
"Academic Preschool"
(1965-)

Principal Investigators or Developers:

Carl Bereiter
Sigfried Engelmann

Sources:

Academic Preschool, Champaign, Illinois. One of a series of successful compensatory education programs. It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 979.

Bereiter, C. Acceleration of intellectual development in early childhood. Final report. June, 1967. Educational Resources Information Center, Document Number ED 014 332.

Bereiter, C., & Engelmann, S. The effectiveness of direct verbal instruction on IQ performance and achievement in reading and arithmetic. 1966. Educational Resources Information Center, Document Number ED 030 496.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Target for this project are disadvantaged preschool children and middle-class children.

The program is content-centered as opposed to cognitive development being the primary aim of instruction, and lasted for two years.

The importance of the early childhood years for personality and social development has long been recognized by psychologists, but only recently has attention been directed towards the possible importance of these years for intellectual development.

The possibility of speeding up intellectual growth has been demonstrated in a variety of recent educational experiments.

Improved opportunities and increased stimulation are two significant factors which have been shown to improve intellectual capacities. However, speeding up intellectual growth requires more than confronting the child with a barrage of stimulating material; it necessitates some technology.

Children become smarter through learning things they don't already know and which will be of some use to them in subsequent learning.

Rather than attempting to stimulate intellectual growth in some general fashion, this program aims at teaching children various concepts and skills that are considered important (in the judgment of the director).

Bereiter sees the failure of the disadvantaged as a failure of instruction, and (to a lesser degree) the same for the middle-class children.

If teaching is made effective and economical, the learning of disadvantaged children and middle-class children can be accelerated.

There is little concern here for such generalities as cognitive development, enrichment, stimulation, and the like.

There are certain things that have to be learned regardless of what particular subject a child is confronted with. In learning anything, one is always confronted with tasks that have certain requirements regardless of the learner. Thus, the problem is a pedagogical one of devising curricula and teaching methods that will enable the child to meet these requirements.

Primary hypothesis

Effective instruction can substantially increase the rate at which disadvantaged children (and middle-class children) are taught new behaviors relevant to both general and specific achievement areas.

b. Data oriented rationale

This being the age of technology, a corresponding "education technology" should have evolved. The first requirement of technology is that distant goals must be viewed as problems that can be considered one at a time.

However, early education has hardly reached the stage where problems are recognized at all, much less the stage where large problems have been broken down into smaller problems that can be dealt with easily.

Most of what are termed problems today are actually just concerns which, when dealt with, do not lead to technological advance.

A large amount of research has been going on, which has turned up a good deal of information about disadvantaged children.

A variety of educational programs are being tried and their effects measured.

But, what difficulties are known to stand in the way of success, which ones have been overcome and which have not, what are the problems in overcoming the remaining difficulties, what efforts are being made to seek out and anticipate other difficulties, and what are the indicated next steps for bringing the projects to fruition, what sort of timetable are the projects on?

The mission of compensatory preschool education was approached as if it could be accomplished simply by throwing all the research data into the task and seeing what worked.

The shortcoming of this tactic is that no problems have been delineated and solved sufficiently. It is important to determine what problems need to be solved before we can succeed in this mission of enabling poor children to succeed in school.

Bereiter questions the relevance of all the research that has been devoted to early learning and to disadvantaged children.

We may know more about them in general, but can we now state any problems in ways that they can be tackled? Do we know whether all this research data makes any difference for the teacher who must educate them; or if it does, what kind of difference and how much?

"It is the technological backwardness of early education, its inability to formulate problems of a technical nature, that makes it impossible for research to have relevance to it." (See title page for source.)

Thus, Bereiter sees need to attempt to set specific goals for early education and to pursue them methodically.

Building upon the work and ideas of Bruner, Ausuble, Hunt, Piaget, Skinner, and Chomsky, Bereiter and his associates conducted six exploratory studies designed to investigate various approaches to early education in the areas of reading, creativity, conservation, and formal operations with the object of identifying directions for innovative development.

1. Teaching reading to two-and three-year-old children.

    This study demonstrated that, on the basis of scores on the Illinois Test of Psycholinguistic Abilities, children taught under a method of teacher-directed group games perform better verbally, while those taught with teaching machines under free play conditions did better on non-verbal tasks.

2. The effect of free-time use of a START teaching machine on reading ability in the kindergarten.

   This study indicated that the teaching machine produced better word recognition ability than instruction without the machine.

3. Children's preferences for high versus low frequency words.

   In this ancillary study, children showed a significant preference for high rather than low-frequency words, tending to lend support to the present practice of using high-frequency words for beginning readers.

4. Four approaches to construction activities in the nursery school and their relation to creative problem solving.

   Four approaches were studied.

   1. Independent problem-solving. Daily tasks were assigned.

   2. Independent construction. No tasks were assigned but the children were encouraged to make something different each day.

   3. Guided problem-solving. Teacher and children worked out the solution of construction problems cooperatively.

   4. Guided construction. Teacher directed the children through a pre-determined series of steps in the construction of prescribed objects.

   When tested, the children who were guided did better than those who worked independently.

   Guided problem-solving, which was expected to have greater transfer value to the test situation, produced no better results than guided construction, which is popularly believed to discourage creativity.

5. Acceleration of conservation of substance.

   Children receiving training in the conservation of inequalities of liquid showed a greater ability in conservation problems than children merely receiving training in actually measuring out and drinking liquids. The conservation-trained group demonstrated ability to transfer what they learned to substances not used in the training.

6. Teaching formal operations to culturally advantaged and disadvantaged preschool children.

   After training to handle an analogy class of "formal operations," children were tested on a problem of the same form ("If X, then A or B," etc.) which they had not previously encountered and also were tested on ability to conserve liquid quantity.

   Seven passed the criterion problem. Of these, only one exhibited conservation of quantity.

   This experiment casts doubt on the generalizability of Piaget's conclusions about developmental progression from preoperational to concrete operational and thence to formal operational modes of thought.

Discussion of results of six exploratory studies

Results indicate a shift in focus from the general to the specific. For example, the studies on reading do not tell us much about the general readiness of children from ages two through five for reading instruction. However, they do suggest that if one considers only sight vocabulary, then a considerable amount of learning could probably be achieved even with the younger children by concentrating all of the teaching on this objective.

In the two studies that dealt with teaching logical operations, it appears that what was learned was something specific and limited. Simple response learning can be ruled out on the basis of experimental design.

In the conservation experiment, it seems that the children learned that in making judgments of quantity, appearances can be deceiving and so you should keep in mind what you already know about the amounts in question.

In the formal operation experiment, the children learned a basic pattern for dealing with systems of statements having a certain logical structure.

Thus, the learning that took place in each experiment was limited in scope.

On the basis of Piaget's theory, one might say that nothing was taught except a few specific tasks; what is really important is progress in cognitive development.

Bereiter argues that real-life teaching does not occur in the abstract, but consists of actual behaviors and its effects can only be observed in actual behaviors.

He considers it hypocritical to say that what the children learn to do is of little importance and then to glamorize it with fancy labels such as "cognitive growth."

The best approach for Bereiter is to take the specific learnings for what they are worth and try to build a curriculum out of the ones that have some demonstrable importance, regardless of their place in a classification of cognitive levels.

The important lesson here is not that concrete or formal operational thought can be produced in preschool children, but that young children can be taught tasks that are classified at these levels. Piaget can help to describe levels of development, but he cannot tell the educator whether or not children will be able to master any specific task! Moreover, he cannot help us judge the educational significance of any particular learning task. Thus, it is difficult to see what value his theory can have for the planning of early education curricula.

As far as creative construction activities are concerned, it appears that the widely acclaimed creativity of young children exists largely in the eye of the beholder; that left to themselves children tend to behave in a stereotyped and repetitive manner; that they seldom work toward any practical, conceptual, or esthetic goals in the productions, and when they do they are easily led astray by imitation, accident or force of habit.

According to Bereiter, the realistic task for early education is to provide the child with enough skills and habits of thought that will allow creative responses to develop if they should happen to occur.

QUESTION: How much can the intellectual development of young children be accelerated?

ANSWER: Impossible to say at this stage.

QUESTION: Can children be taught such-and-such specific thing?

ANSWER: Yes!

Knowing this doesn't tell us anything about children's potentialities, but it does help us to realize the possibilities for developing instructional techniques to achieve definite goals.

If IQ can be thought of as performing tasks on the Stanford-Binet, then it is clearly possible to teach children these tasks as well as word recognition, conservation of liquid quantity, and the solving of center problems.

Promising approaches to early education

1. Direct instruction, as in the teaching of sight vocabulary, construction skills, and formal operations.

2. Modeling, as in the teaching of conservation and in the guided problem-solving approach to construction activities.

3. Free use of teaching machines, as the kindergarten reading experiment.

Best approach appears to be direct instruction, which has the scope and flexibility that make it applicable to a large range of teaching tasks.

"Direct instruction" includes the large range of normal teaching activities that involve demonstrating, telling, and asking. This is no more than the approach that has been used many years in elementary and high schools. But it's something novel in preschool education.

In using direct instruction, however, it is important to know exactly what it is that one is trying to teach.

Early education has traditionally been unconcerned with specifics, but, on the basis of revealing exploratory studies, such programs should be restructured in the form of specific learning objectives using direct instruction methods.

c. Developmental theory

Bereiter's academically oriented preschool has its foundations in the ideas of Bruner, Ausuble, Hunt, Piaget, Skinner, and Chomsky (in particular).

Bereiter sees educational research today as an attempt to leap from eighteenth century notions of Rousseau's "learning by nature" to the technological twentieth century without passing through the nineteenth.

We must return to the nineteenth century in which goals were set first and then, working backward in small successive steps, tools developed to realize these goals.

This is the work of the program and curriculum writers who analyze learning units into their constituents. In this way, a series of steps evolve which, when utilized, will lead to the learning goal.

In this way, Bereiter sees the opportunity for developing an educational technology: goals are cast in the form of problems or difficulties that can be dealt with one at a time; problems are related to one another, as well as to the ultimate goal, so that alternative problems are always available; therefore, when one problem is solved, new problems can be tackled making use of the solution. Thus, progress is orderly.

In all content areas, the task or process can be broken down into separate problems and sub-problems that can be treated individually, yet without losing sight of the way in which these problems are related to one another.

Such "orderly progress" can be seen in the hierarchial analyses carried out by Gagne and his associates.

Although the program puts into practice the theories and ideas of Bruner, Ausuble, Hunt, Piaget, Skinner, and Chomsky, it also diverges from and contradicts many of the ideas of these same men (in the opinion of some).

But, Bereiter does not feel that it is essential at this stage of educational research today to rely upon or comply with specific psychological theories or precepts.

He observes that "... at the present time in early education there is little correspondence between the procedures and problems involved in producing behavioral phenomena and the procedures and problems involved in explaining them." (See title page for source.)

Thus, Bereiter does not adhere to most current developmental theories and instead concerns himself with the observable and measurable behaviors of children while engaged in the learning process.

He looks at learning as a process of acquiring ability to perform specified tasks, which, in turn, become building blocks for future success in task-oriented activities.

Development, then, becomes a continuous process of skill acquisition.

d. Instructional theory

Children are expected to learn more from a fast-paced, content-centered curriculum.

As a result of the preliminary data collected and the clarification of a developmental approach, Bereiter concluded that whatever was chosen to be taught could be taught to some effect.

Therefore, the main problem was to determine what was most worthwhile to teach and to design a coherent program that would get the most "educational mileage" out of a given amount of instructional time.

Result   a multi-purpose education program made up of an aggregate of hundreds of specific learning tasks, each of which has to be justified as to its worth.

This approach is different from most other programs which are derived from some general aim to foster intellectual growth.

The exploratory studies conducted by Bereiter and his associates (Engelmann) indicated that the best pedagogical method was direct verbal instruction.

In addition, it appeared that, once the learning tasks had been sufficiently specified, there didn't seem to be any reason to pursue them by more "round-about" means.

In the academically oriented preschool for disadvantaged children, the working assumption of the designers was that disadvantaged children differed from others only in what they had and had not learned previously.

Thus, an effective compensatory education program could be designed simply by starting at a lower level of presumed initial knowledge and moving more rapidly and efficiently so that the children could catch up to other initial levels of knowledge which were higher.

II. Instructional System

a. Performance objectives

The goal was to see how much disadvantaged preschool children could learn in areas of language, arithmetic, and reading through straight-forward teaching of carefully presented content.

Evaluation was based on the measurable effects of the teaching program on achievement and language test performance.

Perhaps an even more important objective was to determine the potentialities of the program for further development to eliminate gaps and weaknesses revealed by the first experimental group.

Objectives as set forth in a study made by the American Institutes for Research in the Behavioral Sciences, Palo Alto, California, of children in program from 1965-67.

Specific goals and performance criteria of Palo Alto study.

1. To respond to both affirmative and not statements when asked "What is this?" "This is a book." "This is not a book."
2. To respond to both affirmative and not statements when told "Tell me about this _______ (book, pencil, etc.)."
3. To use polar opposites ("If it is not ______, it must be _____.") for four or more concept pairs, e.g., big-little, up-down, etc.
4. To use the following prepositions correctly in sentences: on, in, under, over, and between.
5. To name positives and negatives for at least four classes, e.g., "Tell me something that is a weapon." "A gun is a weapon." "A cow is not a weapon."
6. To perform simple if-then deductions. The child is presented a picture with large and small squares. All the large squares are red, but the small squares are of various colors. "If the square is big, what do you know about it?" "It is red."
7. To use not in deductions. "If the square is little, then it is not red. What else do you know about it?" "It is blue or yellow."

8. To name all the basic colors.

9. To count to ten without assistance and to one hundred, assistance at tens (thirty, forty, fifty, etc.).

10. To count objects up to ten.

11. To recognize and name the vowels and at least fifteen consonants.

12. To distinguish words from pictures.

13. To select rhyming words in jingles.

14. To possess a sight-reading vocabulary of four words or more, with evidence that the word on the flash cards has the same meaning for the child as corresponding spoken word.

b. Instructional organization

The program is centered around three specific content areas: language, arithmetic, and reading.

No concern is being given to involving the children in any particular experiences which might affect them indirectly.

The three academic courses (language, arithmetic, and reading) take up half of the instructional program. The other half is less structured and intended to amplify and reinforce what was learned in the academic courses rather than to achieve additional objectives.

It consists of a free period, snack period, singing period, and a story-telling period involving a lot of question-and-answer activity.

The overall effect is a school that is teacher-directed and task-oriented, while still maintaining a cheerful atmosphere.

Teacher does not first shape behavior and then introduce academic content.

She simultaneously introduces academic content and the rules of behavior associated with the content.

Focus always on behavior related to the task, never on behavior in the abstract.

c. Instructional content

1. Language instruction

Focuses on minimum essentials of language competence.

These were identified on the basis of the logical requirements of a communication system that enables the teacher and child to speak to each other and that provides a medium through which the concepts a child should master can be learned.

Analogies are emphasized; concepts are grouped together on the basis of the rules governing their manipulation. (Ex., big-little, hot-cold, boy-girl.)

Every attempt is made to increase the number of responses of each child each class period.

The program begins with the children imitating basic identity statements and culminates in the use of language for deductive reasoning.

2. Arithmetic instruction

Approaches arithmetic as a kind of "science of counting," without reference to real-life objects. The designers believe that disadvantaged children generally lack the verbal and logical sophistication necessary to abstract arithmetic principles from the mass of phenomena of everyday life.

Then, arithmetic was taught through use of equations which could be read as fact statements and also as operational rules.

3. Reading instruction

Directed toward the mechanics of reading.

Children given experience in working with a rule system similar to those in other formal disciplines.

Logical aspects of English orthography are highlighted.

Initial vocabulary restricted to three-letter consonent-vowel-consonant patterns. (Modified ITA approach.) Ex., Rule 1: A word has a beginning and an end. The beginning is the initial consonant; the end consists of the vowel and the final consonant. If it has a beginning and an end, it is a word. The beginning always comes before the end.

4. Other activities.

Free period involving working puzzles, playing with miniature house, furnishings, and family, or casual conversations with teachers.

Snack time involving identifying color of fruit drink.

Singing songs that are specially written and scheduled to provide practice in language operations.

Story-telling involving questions and answers to a greater extent than is usual.

d. Instructional methods and techniques

Instructional sessions are represented to the children as work rather than play.

Child is responsible for speaking when called upon to do so, to "try hard" to give the correct responses, and to refrain from disruptive activities.

Adherence to behavioral rules is rewarded by verbal praise (and during first month by cookies).

Children are reprimanded for deviations from the rules and, if this is not effective, are excluded from group for short periods of time.

Instructional sessions are kept lively and enjoyable.

Every attempt is made to shift the basis of motivation to the children's own accomplishments and progress as improvement becomes demonstratable.

Parents were not invited to participate directly in the program.

However, their interest and enthusiasm was maintained through parent meetings and home contacts made by college students.

The general instruction strategy followed in all three subjects is that of rule followed by application.

A verbal formula is first learned by rote ("This ________ is ________," "If you start out with ______ and get ______ more, you end up with ________.") and then applied to a graduated series of analogous examples of increasing difficulty.

Tasks are initially presented in a highly structured form that provides a maximum of syntactical and presentational prompts; then the task is systematically "destructured" to remove these prompts and admit the variations in presentation that would be encountered in normal situations.

The program assumes nothing more of the child at the outset than that he be capable of making some attempt at imitating what is said to him.

For example (a few basic "moves" constitute most of the teacher's repertoire).

1. Verbatim repetition

    TEACHER: This block is red. Say it . . .
    CHILDREN: This block is red.

2. Yes-no questions

    TEACHER: Is this block red?
    CHILDREN: No, this block is not red.

3. Location tasks

TEACHER: Show me a block that is red.
CHILDREN: This block is red.

4. Statement production

TEACHER: Tell me about this piece of chalk.
CHILDREN: This piece of chalk is red.
TEACHER: Tell me about what this piece of chalk is not.
CHILDREN: (ad lib) This piece of chalk is not green. . . not blue, etc.

5. Deduction problems

TEACHER: (with piece of chalk hidden in hand) This piece of chalk is not red. Do you know what color it is?
CHILDREN: No. Maybe it is blue. . . Maybe it is yellow. . .

In teaching equations, the following procedure is used

Equation: 3 x 4 = 12

CHILDREN: "Three times four equals twelve."
"If you count by three's four times, you end up with twelve."

Equation: 3 x b = 12

CHILDREN: "Three times how many equals twelve?"
"Count by three's how many times to end up with twelve?"

Analogous statements and operations were used for addition, subtraction, and division.

The child learns to operate in accordance with explicit rules by drill on a sufficient number of analogous instances that the rules generalize to new instances.

In reading instruction, the initial vocabulary is restricted to three-letter consonant-vowel-consonant patterns (avoiding some of the more troublesome consonants).

Six sets of rules are found to hold with these words. Parts of words are presented to the children on cards, the initial consonant (the beginning) on a white card and the last two letters (the ending) on a yellow card.

Learning to apply the rules requires learning implied visual discriminations ("look the same") and auditory discriminations ("sound the same").

This readiness phase is followed by a conventional phonic approach, using spelling patterns found in Bloomfield and Barnhardt's Let's Read.

Principle of instruction: teach in the fastest, most economical manner possible.

In language, the children are taught how to use a "minimum" instructional language; language derived from the requirement of future teaching situations.

In all teaching situations, the teacher presents physical objects of some kind and calls the children's attention to some aspect of the objects.

Teacher "tests" the children by asking a child (or the group) questions.

The basic language that is needed for all such instructional situations is one that adequately describes the objects presented, that adequately calls attention to the conceptual dimension to which the teacher is directing the children, and that allows for unambiguous "tests" or questions.

Teacher has three primary roles in the program.

1. Manage the group of children, keep them on task.
2. Teach concepts.
3. Test the children's knowledge of concepts before either providing a remedy or proceeding to the next task.

General rules guiding teacher's behavior in all three areas.

1. Teach as rapidly and economically as possible.

2. Get as many correct responses and as few incorrect responses out of the children during the alloted time as possible.

3. Teach the behaviors necessary for successful classroom performance as economically as possible.

Thus, the teacher does not first "shape" behavior and then introduce academic content; she simultaneously introduces academic content and the rules of behavior associated with content; focus is always on the behavior related to the task, never on behavior in the abstract.

Negative sanctions to use

Loss of food reinforcers
Additional work
Physical manipulation
Scolding, usually in loud voice
Repetition of task

Positive sanctions to use

The use of reinforcing objects in presentations
The use of personalization
The use of mock shock
The use of praise
A dynamic presentation of objects
Positive speculations
Exercises with a reinforcing pay-off
Relating positive comments of others--both real and fictitious
Food rewards
Fooler games (The children say that when they add three to four, they end up with seven. The teacher says, "So I write a seven." She writes a four. The children object, and the teacher pouts, "I guess I just can't fool you guys.")
Hand shakes
Special privileges
Singling out member of the group for praise
Presenting take-homes ("Tell me this sound and you can take it home.")

The primary reinforcing emphasis is on positive reinforcement.

When the teacher presents concepts, she uses these reinforcing techniques: she moves quickly so presentation doesn't become static; she varies the intensity of her voice; she presents many interesting examples of the concept; she structures the presentation so that the children have a pay-off.

Basic rule in presenting any new concept--The presentation must be consistent with one and only one concept!

Teacher tests the children on various levels of performance.

First test:	whether children can find (or point to) the appropriate example.
Second test:	whether children can answer yes-no questions about an object the teacher points to.
Third test:	whether children can answer what questions.

Concepts are introduced rapid fire, in no particular order.

As many as twenty questions a minute are presented.

Presentations are geared to the lowest performer in the group because the goal of instruction is to teach every child each criterion skill.

e. Instructional materials

The primary "materials" of this program are the verbal patterns of the teachers.

Through carefully structured sequences of statements and questions, the children come to acquire habits of thought which transfer to new situations.

All that is required are the standard materials of a preschool.

Form boards
Jigsaw puzzles
Books
Drawing and tracing materials

  Cuisenaire rods
  Miniature house, barn and farm animals
not available -
  Motor toys
  Climbing equipment
  Paints

Project staff either designed own curriculum materials or made adaptions from publications currently on open market.

III. Delivery System

a. Organization of learning environment

Experimental academically-oriented preschool for disadvantaged children was composed of fifteen to twenty children who came from homes that would be classified as culturally deprived.

Classes were conducted for two hours a day, five days a week, with occasional field trips.

Children were divided into three groups of about five each.

There were three teachers, one for language, one for arithmetic, and one for reading. (Pupil/teacher ratio --5:1)

The schedule was similar to a high-school schedule of separate subject-matter classes, but with a homeroom period between each instructional session. All teachers participated in "home-room" activities.

Typical day

1.	Free play	10 minutes
2.	instruction in one subject	20 minutes
3.	Homeroom (toileting, snacks, singing)	30 minutes
4.	Instruction in one subject	20 minutes
5.	Homeroom (reading & discussion of stories)	20 minutes
6.	Instruction in one subject	20 minutes
	TOTAL	2 hours

A fourth teacher worked remedially with children whose performance was below that of the instructional groups.

The three regular groups were stratified according to level of performance, based initially on ITPA scores, but shifts made as performance levels changed.

Floor plan consisted of one large room with three adjacent "special subject" rooms and lavatory facilties.

Homeroom contained tables, refrigerator, piano, and shelves with equipment and books.

The three study rooms were carpeted, with acoustical tiled ceilings and were unadorned.

b. Pre-service and in-service procedures and materials

Consisted of training in the strategies for teaching the language, reading and math classes, and for disciplining, plus preparation for first day of school including a complete rehearsal of how to begin and what to do.

In-service training was also provided.

IV. Evaluation System--1966 Study

a. Evaluation instruments and procedures

Evaluation made in 1966 with both disadvantaged and middle-class children.

Subjects

Forty-three disadvantaged four-year-old children (eligible for Head Start).

Of these, fifteen were assigned to the experimental group and twenty-eight to the comparison group.

They received Stanford-Binet tests and were divided into three groups--high, middle, and low intelligence.

Children were assigned to the experimental and comparison classes with each class receiving the same proportion of highs, middles, and lows (ratio of Negroes to Whites was also held constant).

In addition, eighteen middle-class four-year-old children were selected for a two-year program.

These were not given IQ tests; introduced into experiment only to show the differential effects of the experimental program on children who might be considered developmentally impaired and those considered normal.

Control group for middle-class children was a group of middle-class four-year-olds in a Montessori preschool.

Evaluation of performance

The disadvantaged children were given Stanford-Binet IQ tests after the first and second year of instruction.

The middle class received Stanford-Binets only after the second year of instruction.

These tests were taken as a measure of "general achievement," primarily in language concepts.

Both groups in the experimental program were also tested on reading, arithmetic, and spelling achievement with the Wide-Range Achievement Test (1965).

The disadvantaged children in the comparison group were not given achievement tests, because they were not taught skills in reading, arithmetic, or spelling.

The Montessori group was given the Wide-Range test after they had finished their pre-kindergarten year.

Procedure

Subjects in disadvantaged comparison class received a traditional preschool education.

During first year, they attended a two-hour-a-day preschool based as closely as possible on the recommendations of child development authorities.

The children to teacher ratio was about 5 to 1.

During the second year, comparison subjects went to public school kindergartens.

Middle-class comparison group attended a Montessori program which operated for three hours a day.

Emphasis of program was on non-verbal manipulative activity.

Child to teacher ratio was about 10 to 1.

During the first year, fifteen disadvantaged and nineteen middle-class children were enrolled in experimental programs for two hours a day.

The second year, the remaining twelve disadvantaged and seven middle-class children were integrated in a single class and received a second year of two-hours-a-day instruction.

Throughout the two-year treatment, child to teacher ratio was about 5 to 1.

b. Research and technical support data

The disadvantaged subjects in the experimental program achieved significantly greater Stanford-Binet gains than the subjects in the comparison program.

Mean IQ of the experimental subjects after two years of instruction was 121.08, well above the mean of normal, middle-class children.

Mean of comparison group was 99.61 after two years of instruction.

None of the experimental subjects experienced an overall loss.

The disadvantaged children in the comparison group showed no particular advantage over children in similar compensatory programs; program failed to bring half of children up to an IQ of 100; the experimental program brought the IQ's of every child to above 100.

The mean achievements of the experimental disadvantaged group were: reading, 2.6; arithmetic, 2.5; and spelling, 1.9. (The scores are what one would expect from eight-to-ten-year-old disadvantaged children; the experimental subjects, however, were six years old at the end of the program.)

The mean achievements of the middle-class children in the experimental group were: 3.4 in reading, 2.9 in arithmetic, and 2.1 in spelling.

Thus, the experimental program resulted in significantly greater achievement for both disadvantaged and middle-class children than other preschool programs now in use.

Some conclusions

If disadvantaged children can be accelerated by three years, the general failure in the public schools is not necessarily a result of the children's innate inferiority or lack of aptitude; it is a function of inadequate instruction.

If younger children with initially low mental ages can achieve at an above-normal rate, school-age disadvantaged children (who usually learn more rapidly) should be able to achieve at the rate of normal children in specific achievement areas.

IV. Evaluation System-- 1967 Study

a. Evaluation instruments and procedures

The fifteen four-year-old children enrolled in the program constituted the experimental group.

There was no control group because the manner of selection was such that the children selected constituted a unique population subset.

The standard chosen against which to evaluate results was that of test norms.

In order to avoid a strong regression effect, the group chosen met rather stringent criteria of poor prognosis, rather than being selected on the basis of low test scores.

Designers felt that bringing the children up to normal on appropriate tests would constitute a reasonable short-term criterion of success of the program.

Measures used--Illinois Test of Psycholinguistic Abilities, Stanford-Binet (Form L-M), and Wide-Range Achievement Test.

Major pretesting was purposely delayed until the children had become well adjusted to school and had begun to make satisfactory progress in it.

The goal of the program was to see how much preschool disadvantaged children could learn in two years in the areas of language, arithmetic, and reading through the use of direct instruction techniques.

The tests selected measure ability to use grammatical inflections, to detect verbal analogies, to use expressive language, vocabulary, general intelligence, and achievement in reading, arithmetic, and spelling.

b. Research and technical support data

Language

On the first testing the children averaged from one-half to one and one-half years below average on all language tests.

By the end of the second year their scores had risen to approximately average. (However, on the grammar test their scores rose from far below average to within two months of average the first year; when direct instruction in grammatical usage was suspended the next year, they gained only four months during that time.) Result they ended with scores well below average on this test.

Intelligence

Mental age rose from about six months below average (the first testing occurring six weeks after school started) to about four months above average.

Achievement

Terminal achievement averaged at the 1.5 grade level in reading, 2.6 in arithmetic, and 1.7 in spelling.

For those tests that had some clearly identifiable content, scores tended to reflect rather faithfully the amount of emphasis that was given to that content in the program:

When grammatical usage was deliberately taught, scores rose dramatically on the test of grammatical usage.

When instruction was terminated, improvement in scores ceased.

Before beginning direct instruction in printing and spelling, the children's achievement in this area was negligible.

When direct instruction in spelling was instituted, scores rose sharply.

If there was any general improvement in test scores that could be attributed to "stimulation" or "enrichment," it was very slight compared to the specific effects and was largely confined to the first year.

The goal of the program seems to have been achieved. By devoting twenty minutes a day to instruction in each area, disadvantaged preschool children can acquire in two years' time

1. enough language learning to take them from a year

or more below average up to an average level of performance,

2. two and one-half years' worth of arithmetic learning (by primary school standards),

3. slightly over one and one-half years' worth of learning in reading and spelling (by primary school standards).

It must be remembered that the comparison is being made with first-grade children who typically receive several hours a day of instruction in these areas.

IV. Evaluation System-- Palo Alto Study on Program, period 1965-1967 (Published, 1969)

a. Evaluation instruments and procedures

Stanford-Binet Intelligence Test and Wide-Range Achievement Test.

Used to measure reading, arithmetic, and spelling.

Administered during period from 1965-1967.

Both experimental and control groups received Binet IQ test three times: fall, 1965; spring, 1966; spring, 1967.

E group also received WRATB in spring of 1967.

Sample size-- three groups of about fifteen to twenty children each.

b. Research and technical support data

E group achieved significantly greater Stanford-Binet IQ gains than C group (at end of both years).

C group IQ, first year gain of 8.07 points. Second year, loss of 2.96 points.

E group IQ, first year gain of 17.14 points. Second year gain of 8.61.

p = .02 for year one, .001 for year two.

For twelve E subjects who completed the full two years of instruction on the WRATB the mean reading achievement was 2.60, the mean arithmetic achievement was 1.87, and the mean spelling achievement was 1.87.

Other evalutions

Interviews with parents and observations of children revealed no ill effects from the highly structured formal instruction.

Few behavioral problems.

Most notable change--confidence of children in their abilities to meet a challenge.

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Program Title: The Appalachia Preschool
Education Program (APE)
(October, 1967-May, 1972)

[or, Early Childhood Education Program (ECE)]

Principal Investigators or Developers:

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Charleston, West Virginia 25325

Sources:

The Appalachian Preschool Education Program: A home-oriented approach. Report compiled by the Appalachia Educational Laboratory, Inc., Charleston, West Virginia, December, 1970.

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PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

APE Program is aimed at 3-, 4- and 5-year-old children living in isolated mountain areas of Appalachia.

It is essentially a child-centered, home-oriented program designed to improve these children's performance in the areas of language, cognition, motor skills, and orienting and attending skills.

Program involves a 5-year period which allows one group to participate in the full 3-year program (beginning as 3-year-olds and finishing as 5-year-olds).

The program is geared toward making up for the deficits these children have as a result of isolation from the rest of society; the utlimate goal is to have them perform those tasks expected of the average child at the first level.

The ECE Program is divided into two components.

1. Product Development

   The objective here is to develop procedures and materials for providing rural children a preschool education utilizing television instruction, home visitation, and mobile classroom instruction; the product to be developed will be a child-centered, home-oriented preschool program to be delivered by means of TV, home visitations, mobile classrooms, and other media.

2. Product Diffusion

   The objective is to conduct specific activities designed to lead to the implementation of ECE Program in the Appalachian region. Two activities are involved: preparing and distributing information to stimulate interest in the program, and advancing the ECE Program to demonstration and operation modes.

b. Data oriented rationale

Program initiated because of

1. increasing evidence of the importance of early years to later development

2. the persisting cultural deprivation of Appalachia

No state now has any preschool programs for children under age five. Conventional kindergartens are not providing adequate education for all the children who need early formal training to enhance their chances for success.

Appalachian region, especially, is in great need for an alternative program; population is largely rural and there are no publicly supported kindergartens; poverty and cultural deprivation are widespread here.

Lack of preschool education was preventing Appalachian children from developing fully and had an accumulative debilitating effect on performance in school.

While over 50% of the eligible children in the U. S. were enrolled in kindergartens in 1966-67, eligible children in West Virginia were enrolled on a less than 4% basis.

Survey of literature revealed that much attention had been given to inner-city, disadvantaged preschoolers and to urban or suburban middle-class kindergarten pupils, but very little was known about the rural child.

On the basis of a survey conducted in 2 counties of West Virginia (West Virginia University), following information was collected (Sample = 160)

1. Family in rural Appalachia is basically stable and intact.

2. Less than half of parents had completed high school.

3. 90% of homes had both mother and father present.

4. About 60% owned own homes.

5. Income of about 68% was below $4,000.

6. Aspiration of parent for child was higher than their own accomplishment.

(Survey of 160 children) Assessment of intellectual ability revealed cultural diversity rather than uniform cognitive intellectual deficits; deficits tend to center upon verbal tasks or those problem settings which demand symbolic representation.

PPVT: IQ scores were below national average at every age level.

In every comparison, child more likely to pass performance type items than verbal items.

On Frostig Developmental Test of Visual Perception, performance on figure, ground and form constancy notably weak.

ITPA: deficits greatest for coding tasks, visual-motor sequential tasks, and auditory-vocal automatic tasks (increased decrement with age).

c. Developmental theory

No data available.

d. Instructional theory

Program is basically child-centered, in which the child initiates and the teacher responds.

However, a specific instructional theory is not clearly outlined.

Instructional system developed mainly out of practical considerations of time, money, and distance. It actually is an alternative approach of getting a traditional kindergarten program to rural children faster and more efficiently than would be possible with conventional classroom-oriented kindergartens.

II. Instructional System

a. Performance objectives

The criterion used to measure the success of the program is 90% performance on those behavioral objectives taught in the program in language, cognition, motor skills, and orienting and attending skills upon completion of the 3-year program by all 6-year-old children with IQ's of 90 and above.

b. Instructional organization

Curriculum Materials Team

Instruction is organized around units of work with a specific amount of time devoted to each unit.

Team decides on a theme to use as a vehicle for presenting and teaching the objectives.

Each person on Team has own responsibility to one element; however, group works together to maintain correlation.

Team gives list of objectives and suggested activities to mobile classroom teacher who uses her own professional skills to provide a group experience which is educational, interesting and fun.

c. Instructional content

All curriculum planning and materials were designed by a five-member Curriculum Materials Team (began 7-1-68).

TV Program "Around the Bend"

Content is carefully coordinated with the material the child will receive from the home visitor and the lessons presented during his weekly visit to the mobile classroom.

Use is made of film shot on location; TV programs are geared toward having fun.

Specific concepts are explored such as large and small, same and different, classification, seriation, numbers and numerals and letters.

Rhythmic activities are included; also, body movement, sounds, textures, and weather.

d. Instructional methods and techniques

Mobile classroom (MC)

Use is made of stories, games and marionette conversations.

Physical exercises are included.

TV Program (TV)

"Around the Bend" is a 30-minute broadcast (9:30 a.m. to 10:00 a.m.), 5 days a week, September to May.

TV teacher presented as a friend who invites children into her home.

Participation by the children is encouraged, both physical and mental, and feedback from homes indicates participation is enthusiastic.

Questions are asked and children respond.

Activities are demonstrated and then TV teacher and children perform them together.

In general, the traditional methods of kindergarten instruction were employed by teachers in TV program and mobile classroom.

e. Instructional materials

Curriculum Materials Team produces all of the curriculum materials---tapes, children's worksheets, parent guides, mobile classroom guides, etc.

A feedback loop had been built into the design which made it possible to incorporate actual observations of children into planning of materials.

III. Delivery System

a. Organization of learning environment

Program delivered by means of television broadcasts, home visitations, mobile classrooms and other media.

The unique difference of the APEP (as compared to traditional preschools) is the method of linking teacher and learner; it serves essentially the same number of preschoolers with the same number of personnel but alters the roles and responsibilities of personnel by delivering the programs via television, mobile facilities, and paraprofessionals.

TV Program (TV)

Around the Bend was designed, placed on video tapes, and televised at 9:30 a.m. daily for children to view at home.

Home Visitors (HV)

Women are recruited from the area in which they were to work.

Requirements: 20 years or older, have driver's license, a car, and high school diploma or equivalent.

Made visits once a week of about 30 minutes.

Their effect is directed toward helping the parent help the child:

1. Explain the theme of the up-coming TV program and what will be needed and provide materials not available at home.
2. Provide suggestions for games or activities which complement the TV episodes but not dependent on them.
3. Show interest in children; motivate mothers to be interested;

broaden children's horizon.

HV are prime source of feedback for Curriculum Team.

Each HV sees about 30 mothers per week.

Mobile Classrooms (MC)

Careful planning went into mobile unit.

Result: The facility is an 8' x 22' box on a truck; overall length is 28'.

Inside, it is fully carpeted, electrically heated, air conditioned, contains its own water supply, and has chemical toilet.

All the furniture is child sized--low tables, small chairs, low sink.

It is colorfully decorated to be pleasant for children.

Staffed by a professional preschool teacher and an aide.

Have use of complete audio-visual unit, a cooking area, chalk board and bulletin board, cabinet space, bookshelves, a sound-activated colored light display, and books, toys and games.

A group of ten to fourteen children at a time come into unit for 1-1/2 hours per week.

There are individual activities, group activities a snack time; each one is aimed toward same objectives as home visit and TV program.

b. Pre-service and in-service procedures and materials

Home Visitors were given three weeks of intensive training before beginning duties.

First two weeks were provided by a consultant from the National College of Education who had had previous experience in training Head Start aides and similar paraprofessionals.

Time was spent on child development and teaching techniques and materials for preschool children.

Third week was devoted to sensitivity training, particularly interview techniques and acceptance of conditions as they are found. (Sensitivity training provided by Psycho-Dynamics, Inc.)

IV. Evaluation System

a. Evaluation instruments and procedures

Program designed to run for 5 years (October, 1967 - May, 1972)

October, 1967 - August, 1968 - planning period
September, 1968 - May, 1971 - field testing
June, 1971 - May, 1972 - data analysis, assessment, reports

Schedule allowed for one group to participate in the full 3-year program (3 to 5 years of age).

Place for program

Had to be typical of rural Appalachia.
Had to have local people interested in seeing innovative preschool program in the area.
Had to be served by local TV station willing to cooperate on broadcasts.

Found

Southern West Virginia Counties of
Raleigh
Fayette
Summers
Mercer

General Hypotheses

Research design

H_o There would be differences displayed in the behaviors of children receiving the home-oriented program as compared to the behaviors of children not receiving program.

It was expected that the combination of TV, home visits and traveling classrooms would be more effective than the combination of TV and home visits.

Either combination would be more effective than TV alone.

It was predicted that there would be evidence that a home-oriented program would be an effective approach to providing a preschool program to rural children.

To test hypotheses

4 treatments designed -

Treatment I (T_1)

Intervention through a daily TV broadcast, a weekly visit by a paraprofessional, and a weekly visit to a traveling classroom.

Treatment II (T_2)

Intervention through a daily TV broadcast and a weekly visit by a paraprofessional.

Treatment III (T_3)

Intervention through a daily TV broadcast.

Treatment IV (T_4)

No intervention.

Variables of age and sex were controlled.

Sample consisted of not fewer than 4 children within each cell, with a cell defined by age (3, 4, or 5), sex, and treatment

$(T_1, T_2, T_3,$ or $T_4)$.

Was necessary to work with clusters of children, so a clustering sampling technique was used.

Maps of area were marked in grids; grids containing cities or towns were eliminated, as were those containing no public roads.

grids numbered 1 to 41
15 grids randomly selected
5 each were randomly assigned to three treatment groups T_1, T_2, T_3.

Surveys made to identify preschool children of appropriate ages within each of 15 grids.

Almost 750 prospective enrollees were located.

Children listed by age, sex, and treatment.

A random sample was drawn for participation in program.

There were 25 children in each cell, making a total of 150 in a treatment group.

Because of extensive testing planned, a smaller sample was randomly selected (N = 6) from each group of 25.

(T_4) Giles County, Virginia was selected for control area. (outside TV viewing area and no kindergartens)

From school census report, random sample of 26 was drawn and stratified to 3 age levels and

(Small Sample) Comparison was made between sample used for West Virginia University assessment of characteristics and sample drawn for field test purposes.

Conclusion: very few differences between two samples.

(Large Sample) About 450 children were enrolled in program in September of 1968.

Small Sample by Age, Sex, and Treatment

Elements		Age 3		Age 4		Age 5		Totals
		Boys	Girls	Boys	Girls	Boys	Girls	
T_1	TV; HV; MC	6	6	6	4	6	6	34
T_2	TV; HV	4	6	4	5	5	5	29
T_3	TV	6	6	5	5	6	4	32
T_4	None	4	4	4	5	5	4	26
	Totals	20	22	19	19	22	19	121

N = 121

Consisted of fifty (aged 3, 4, and 5) and in three treatment groups.

Group	Aged 3	Aged 4	Aged 5	Total
T_1	50	50	50	150
T_2	50	50	50	150
T_3	50	50	50	150
[T_4 (Control) = 35]				450

September, 1968--pretest of all four groups

Intelligence	PPVT
Psychomotor	Frostig Developmental Test of Visual Perception
Psycholinguistic	ITPA

No direct measure of learning resulting from program, except for test devised and administered in June, 1969.

b. Research and technical support data

Summative Evaluation

1968-1969

No distinct pattern of growth evident.

Trends found were not linear or additive.

Group visited by paraprofessional produced gains in most areas were as large as those of group which visited mobile classroom.

Group which received only TV program showed relatively smaller gains.

Curriculum specific test that was devised, seemed to divide children into two groups--those who received visits from paraprofessionals and those who did not (especially in terms of cognitive skills).

Children in treatment group samples showed very large variance on all gain scores.

Group which received visits achieved about 70% of program objectives after one year; control group achieved less than 50% (however, must also take into consideration that C showed a mean IQ score gain of 33 points over nine month period; sample, therefore, may have been biased, or testing inadequate).

ITPA showed gains for the TV/HV group and MC group in areas closely related to objectives, such as verbal fluency and ability to make coherent descriptive statements about objects (other areas didn't show consistent gain).

Frostig showed significant gains for MC group in area of figure-ground and embedded figure discrimination (related to reading readiness).

1968-1970

Cognitive and language growth.

1. Did children in the treatment groups score significantly different on tests measuring cognitive and language growth?

2. Did five-year-old children who have been in the program two years meet the program criterion?

Sample used

T_1	105 pupils (TV; HV; MC)
T_2	81 pupils (TV; HV)
T_3	80 pupils (TV)
$C\text{-}T_4$	31 pupils (none)

Age and sex were controlled.

Instruments

The PPVT

The Appalachia Preschool Test (APT), an indicator of achievement of specific program objectives)

The Marianne Frostig Development Test of Visual Perception (Frostig)

The ITPA

Procedures

The data for each age and sex in each treatment group were compared by one-way analysis of variance across the treatment groups in order to determine if the differences in means for each age-sex group was significant.

For those comparisons which the analysis of variance indicated that the differences among means were significant, t-tests between each pair of means were completed to show which means were greater than other means. (.05 level)

Results

There were significant differences in the mean IQ scores for the PPVT for the 3- and 4-year-old girls.

The 3-year-old girls in the C, T_1, and T_2 groups had higher IQ's than the TV only girls.

3-year-old C girls had higher IQ's than the T_2 girls.

4-year-old C girls had higher IQ's than any of the 3 T groups.

Thus, the 3- and 4-year-old C girls obtained higher PPVT IQ scores than the corresponding T groups.

On the APT, there were significant differences among the 4-year-old males and 3-year-old females. The T_1 and T_2 groups scored higher than the TV only and C groups.

On the Frostig, Subtest 2, the 3-year-old girls of the T_2 and C groups had higher means than the TV only group.

On the Frostig, Subtest 3, the 3-year-olds in the T_1 and T_2 groups scored higher than the TV only and C groups. The 5-year-olds in the T_2 and TV only groups scored higher than the T_1 group, and the T_2 group had a higher mean than the C group.

On the ITPA, the only set of significantly different means was those of the 3-year-old girls. The T_1, T_2 and C groups scored higher than the TV only group.

To determine if 5-year-old children who had been in the program two years had reached the program criterion (correctly answering 90% of the 95 questions on the APT by those of 90 and above IQ).

> the percentage of items answered correctly on the APT ranged from 65% to 80%.

Summary

1. The two HV groups did show significant gains in knowledge over the TV only and C groups, especially on the APT.
2. The TV-HV-MC groups did not show significant gains over the TV-HV groups.
3. The 5-year-old children in the treatment groups achieved 65 to 80% of the program objectives as measured by the APT. None of T groups reached the desired level. (However, the criterion has not been validated yet with children who have been in program three years.)

Social Skills Evaluation

H_o: MC experience would facilitate social learning skills

Groups used: T_1 and T_2

Measure: task involving placing model furniture in a model house

Test: interaction analysis

Sample: (144); 4 members who were strangers were placed in each group. (final N = 104)

Design: Two all male groups, two all female groups, and two mixed groups at each of three age levels and in each of two T groups (six groups).

T_1	54 children
T_2	50 children

Observation: Consisted of 28 categories of behavior; about every three seconds a coder recorded category that best described activities of previous three seconds--continued the length of session.

T_1 groups initiated both constructive and antagonistic behavior, more often than expected.

T_1 group asked more questions of peers than T_2.

T_2 listened to teacher more and responded more frequently; T_2 tended more to seek security; gave more "help on own initiative" than T_1, maybe because he felt others had same insecurity as he; or maybe T_1 was accustomed to MC with teacher always present to help.

T_1 was much less withdrawn; T_2 children tended to work alone.

T_1 showed more enthusiasm (although sometimes seemed bored and stopped).

T_1 responded more often than T_2; might indicate T_1 subjects were more responsive than T_2 subjects in a task-oriented situation.

A chi square test of independence between treatment group and primary social skills was significant at the .005 level or lower; that is, certain social skills were related to the additional mobile classroom experience.

In general, the direction of difference between the observed and expected frequencies indicated the effectiveness of the mobile classroom for certain social skills.

Summary

1. Children in the TV-HV-MC group possess social skills

which are more facilitating to the completion of a group task than do children in the TV-HV group.

Parental and Pupil Attitudes

Ascertained through a questionnaire sent to parents and through analysis of reports returned by the HV.

Questionnaire designed to compare parents' attitudes toward the APE television program, Around the Bend and Captain Kangaroo and Romper Room.

The three treatment groups were used as the sample (T_1, T_2, T_3). A representative sample of 105 parents included 35 parents from each of the three treatment groups (81% of questionnaires were returned).

A parent-child attitude checklist was completed by the HV each week from 9/69, until 6/70, on a randomly selected sample of 70 families which she would normally visit.

Checklist consisted of 10 questions measuring attitudes on a 5-point scale.

A weekly mean was computed on each of the questions for each group and a combined grand mean was calculated separately for all questions pertaining to parents and children.

Results

74% of the T_2 group (TV-HV) ranked Around the Bend first (Captain Kangaroo, 22%; Romper Room, 4%).

Both the T_1 (TV-TH-MC) and the T_2 (TV-HV) groups rated Around the Bend and Captain Kangaroo about equal with about 40% of the first-place ratings for each program.

The HV report analysis indicated that parent and child involvement was high in both groups measured, with parental interest remaining consistently higher than the children's.

Both groups showed very high levels of interest at the beginning and end of the program year (1969-70).

b. Research and technical support data

Summative Evaluation

Summarizing (1968-1970)

Home Visitor (HV) is probably most important part of program in promoting cognitive growth.

Provides model for child's speech and encourages participation in program, and influences mother and thus changes reinforcement contingencies toward more learning experience in the home.

TV Program in itself provides only substance for cognitive and affective learning which is reinforced by HV.

Mobile Classroom (MC) provides the social skills necessary for child's personal development and opportunity to further his learning in a group situation.

In 1970-1971, sample will be enlarged and comparisons will be made with traditional kindergarten and a control group which is equivalent in all important respects to T group.

Formative Evaluation (1968-1970)

Was undertaken with each of the three components of program.

Involved administration of bi-weekly tests to measure the extent to which objectives were reached, feedback to home visitors and mobile classroom teacher regarding nature and effect of their patterns of verbal interaction, and a systematic observational system to measure viewer reactions to each segment of each TV broadcast.

Bi-weekly tests indicated what specific objectives needed more emphasis or required a different approach.

HV watched a TV program each morning with a child and used an observational system to record children's responses to broadcast; allowed measurement of individual reactions to each segment of program.

Results

3-, 4-, and 5-year-old viewers were most enthusiastic when programs involved animals, mysteries, activities involving both the TV teacher and the viewer, activities in which the TV teacher expressed strong emotions like happiness, surprise, and wonderment.

Girls were slightly more enthusiastic about programs viewed than were boys. (1969-70)

More overt enthusiasm was exhibited by the 4-year-old group than any other age group; 5-year-old boys were least enthusiastic of all.

Still, the average number of overt behaviors indicating enthusiasm was 8.4 for each of the programs produced for 1969-70, which is an increase of 3 expressions of overt behavior over a sample of best programs produced in 1968-69.

One objective of TV programs was to establish a strong personal relationship between the TV teacher and the viewer; was determined that viewers responded to over 75% of her questions and suggestions (as opposed to a 59% response rate for best of TV programs during first year) and thus objective seems to have been achieved.

Data indicated that one of most effective ways to ask a question was to switch from a full view of the teacher to a closeup of her face looking directly into the camera just as she started to ask the question; question followed by short pause with look of hopeful expectation on her face, and then a statement such as "Right, it is a monkey."

Problems encountered (1968-1970)

Unable to effectively measure affective objectives (which comprise about 30 - 40% of TV programming).

Program constantly changing and growing; difficult to develop measures which will reflect all objectives before they are incorporated into program; pre- post-test design is thus difficult.

Implications

Cognitive and Language Growth

1. Agencies desiring to use the APE program materials will be encouraged to use the TV-HV-MC approach (especially the HV) and not just the TV program.

2. For 1970-71, the amount of time each child spends in the mobile classroom is being increased from one and one-half hours per week to two hours per week, and the teacher in the van is being encouraged to teach more toward the specific objectives of the program.

3. The control group was too small and more intelligent than the treatment groups; design for 1970-71 includes pretesting of 60 children and post-testing of 120 children selected to match the IQ, sex, and socioeconomic level of the T groups.

Social Skills

1. If acquisition of social learning skills constitutes a desirable educational objective, then

    a. activities designed to promote the development of these skills should be formulated and employed, and

    b. the total exposure of children to the mobile classroom experience should be increased.

2. The task of placing model furniture in a model house needs to be studied further.

3. The statistical significance of comparisons based on large numbers of tallies is questionable regarding their educational significance; in 1970-71, more data will be tablulated such that the individual child is the unit of observation.

Parental and Pupil Attitudes

1. The home visitor stimulated interest in the TV program and should be considered an important part of the total package.

2. Parents do not feel that the TV program is as important if there is a mobile classroom component; effort should be made to correlate TV instruction and mobile classroom instruction.

Formative Evaluation

1. APE Program should be made more appealing to four- and five-year-old male viewers.

2. New programs should incorporate those activities which have been found to be more effective in encouraging active viewer participation.

V. References

The Appalachian Preschool Education Program: A home-oriented approach. Report compiled by the Appalachia Educational Laboratory, Inc., Charleston, West Virginia, December, 1970.

Early Childhood Education Program: Summary of test data. Report compiled by the Appalachia Educational Laboratory, Inc., Charleston, West Virginia, August, 1970.

AEL 'Gets Published': A Collection of articles published about the Appalachia Educational Laboratory, Inc. Newsletter compiled by the Appalachia Educational Laboratory, Inc., Charleston, West Virginia, Summer, 1970.

Program Title: Belle Haven Preschool Project
(1966-1968)

Principal Investigators or Developers:

Mental Research Institute

Address: 555 Middlefield Road
Palo Alto, California 94301

Sources:

Review of the Belle Haven Preschool Project. Report compiled by the Mental Research Institute, Palo Alto, California, 1970.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Program not aimed at any particular SE class.

Project began in the fall of 1966 under sponsorship of MRI until June, 1968.

Participants were fifty children, three years old, and their parents and their other children.

Essentially an enrichment program.

Emphasis on activities stimulating language and cognitive development and enhancing self-concept.

It is hypothesized that intellectual and social development will proceed more rapidly with the active participation of the children's parents.

b. Data oriented rationale

The Belle Haven Project was financed initially under the California State Department of Education compensatory education funds which required some sort of parent participation.

The importance of parent participation was felt to have substantially demonstrated in research over the previous five years.

c. Developmental theory

Program based on theory that children learn best by doing, exploring, and socializing.

No further explanation was available.

d. Instructional theory

Heavy emphasis on techniques of behavior modification, especially reinforcement and extinction (social rewards, not food,or other material rewards, were used).

II. Instructional System

a. Performance objectives

Project directors felt they must demonstrate the effectiveness of the program through the maintenance of its gain over a period of years.

Hoped children would show increased language and mental ability and have a better image of themselves.

b. Instructional organization

Followed regular nursery school programs in some respects. Free play activities were an integral part.

For purposes of evaluation, twenty-five of the children and their parents were assigned by random stratification to the Intensive Participation Group, in which the mothers were expected to participate in the preschool program weekly and attend a weekly parent education class (C_i).

Other twenty-five were assigned to the Minimal Participation Group, where the mothers were expected to participate in the preschool program monthly and attend a monthly parent education class (C_m).

Therefore the primary interest was the effect of parent participation on the cognitive and social development of children.

c. Instructional content

Regular nursery school content.

Language activities (not specified as yet).

Activities contributing to cognitive development.

d. Instructional methods and techniques

No data available.

e. Instructional materials

Standard nursery school materials.

III. Delivery System

a. Organization of the learning environment

Regular nursery school environment.

Free play was important.

Opportunity to experiment, explore, socialize.

b. Pre-service and in-service procedures and materials

No data available.

IV. Evaluation System

a. Evaluation instruments and procedures

Principle tests-- Stanford-Binet, Form L-M
Peabody Picture Vocabulary Test
Metropolitan Readiness Test

Seven tests were administered to the children in two experimental groups:

Fall, 1966 pretest
February, 1967 mid-test
June, 1968 post-test
Fall, 1967 test
Summer, 1968 test
Summer, 1969 test
Summer, 1970 test

Illinois Test of Psycholinguistic Abilities was used as a post-test at the end of the two-year program in 1968 to compare the two experimental groups.

Metropolitan Readiness Test results were obtained from the school district (which were given in 1969 as the children completed kindergarten).

Stanford Achievement Test results were secured from school district which were given in spring of 1970 as children were completing first grade.

Sibling tests-- reason for including-- program treatment for both experimental groups was same except for difference in parent participation. Therefore most of treatment was same. What parents gained from program would be demonstrated in effects upon siblings who did not experience enriched program.

Data analysis and statistical procedures

Chi square used.

Pretest scores for subjects were divided into four intervals and then plotted against post-test scores.

Median post-test of each interval was plotted and a best-fit line made based upon these medians.

Number of subjects scoring above this best-fit line was counted for two experimental groups and a two-way chi square analysis was used to compare two groups.

b. Research and technical support data

Although differences between two groups are not significant with limited type of analysis and significance test used, results do show that mothers' participation apparently made most difference in first four months and secondly in first eight months.

Program so intensive that difference in mother participation could not be observed subsequently/or it had little effect in relation to overall richness of program.

Program seems to demonstrate its value, however

> (Stanford-Binet) mean gain for entire group from 1966-1970 was almost seven IQ points (from 87.31 to 94.24).
>
> If these children had not been in a preschool program, scores would probably have decreased overall rather than increased.
>
> (Peabody Picture Vocabulary Test) for two groups combined, overall gain from 1966-1970 is somewhat larger for the Minimal Participation Group than for Intensive Group, but no differences are significant.
>
> Results are similar to those for S-B test in some ways.
>
> Gains in P. P. V. test more gradual and so are losses after end of program.
>
> (Metropolitan Readiness Test) Minimal Group scored slightly higher than Intensive Group, although difference insignificant.
>
> Both groups scored higher than a so-called control group made up of children enrolled in preschool program during first year but attended only from two to fifty-four program days.
>
> (Stanford-Binet Siblings) first testing (1966-1967) and second testing (1968). Intensive Group gained 8.96 points and Minimal Group gained 3.68 points.
>
> Retested (summer, 1969). Program not in session. Both groups declined. Overall change was a 3.26 gain for (C_i) siblings and slight -.58 loss for (C_m) siblings.
>
> These results may show effect of difference in mothers'

participation.

Comparing 1966 scores with summer, 1969, scores, (C_i) test 4.77 points higher than (C_m) siblings.

Conclusion

If trends continue, may demonstrate effects which mothers' participation has upon members of family other than child enrolled in experimental preschool program.

Gains were felt by investigators to be impressive in comparison with other programs.

Apparently parent participation is of value, whether intensive or minimal.

Parents themselves realized values of programs in that they wanted to continue program after initial research program ended--more highly motivated.

Intensive Group mothers were primarily responsible for continuing program.

V. References

Review of the Belle Haven Preschool Project. Report compiled by the Mental Research Institute, Palo Alto, California, 1970.

Program Title: Detroit "Preschool Child
and Parent Education Project"
(1966-1967)

Principal Investigators or Developers:

Detroit Public Schools

Address: Detroit Public Schools
Detroit, Michigan

Source:

O'Piela, J. Evaluation of the Preschool Child and Parent Education Project as expanded through the use of Elementary and Secondary Education Act, Title 1, Funds. February, 1968. Educational Resources Information Center, Document Number ED 021 621.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Aimed at 3- and 4-year-old children and their parents from disadvantaged homes.

Designed to increase the readiness of preschool children for school and provide a solid foundation for future educational experiences.

Program lasts for nine-month periods.

Involved 400 children each year (1966 and 1967).

In general, program's purpose is to discover the most effective ways of maximizing the growth of preschool children from disadvantaged backgrounds.

Specifically, objectives are:

General

1. To provide a program of varied curricular experiences which will foster early development of the basic cognitive and social skills and of motivation necessary for success in school.
2. To aid parents in gaining the knowledge and skills needed to enable them to take a more active role in reinforcing child's school experience.
3. To provide for parents an educational program which will continue instruction with opportunities for interaction and communication among the participants and among participants and the project staff.

Objectives met through the establishment of preschool centers drawing together family, community, and professional resources which can contribute to the child's total development.

b. Data oriented rationale

Research indicates differences in school performance between the M-C child and the culturally-deprived child.

Based on known cumulative effect.

Basic learning skills develop as a result of child's continuous reaction with his environment.

A continuity of rich environmental experiences is the vital factor influencing development during the preschool years.

Preschool education must provide appropriate experiences that will compensate for the inadequate experiences of the past.

Such compensatory experience should come at earliest possible stages in child's development so he can begin formal schooling on a foundation more nearly equal to that of more advantaged children.

Screening evaluations of preschool populations indicated that about 25% of children enrolled in each center were deficient in language functioning.

c. Developmental theory

No data available.

d. Instructional theory

Good language practices fostered as peers stimulated each other vocally, and there was an opportunity for an exchange of words and ideas.

Adult an important component of instruction: teacher stimulates verbal interaction between children; parents follow up with language experiences encouraged through joint trips and activities.

II. Instructional System

a. Performance objectives

1. Preschool children will show greater rates of language gains than those gains established as baseline data as a pilot group.

2. Parents of preschool children will learn skills which will enable them to become more active participants in the school experiences of their children and strengthen their own self-concept.

3. Preschool personnel will increase their knowledge and skills through participation in in-service meetings arranged for them.

b. Instructional organization

Organized along lines of traditional nurseries but with a multi-sensory approach, and an emphasis on language experiences.

Provides developmental experiences for children, supported through group work with mothers.

Therefore, primarily experientially oriented.

Experimental language study

Pilot language study was designed to evaluate a sequence of intensive language lessons for use in eight of thirteen centers.

Children not included in Detroit Preschool (DP) sample were selected; show large deficiencies in language skills.

Classes limited to enrollment of five children meeting twice weekly (20 minutes each) for language-oriented activity periods during which oral communication facility is developed; auditory skills emphasized.

Assisting teacher in each center was responsible for conducting language classes, with close support from Language Development Specialist.

New lesson procedures were first discussed and demonstrated in special workshop sessions.

Lessons selected according to remediation indicated in screening and also according to curriculum of DP.

Manual developed for these classes.

c. Instructional content

Language instruction basically saturated multisensory approach (providing activities which simultaneously call upon two or more of the senses of hearing, seeing, feeling, smelling or tasting) and oral language development are emphasized.

Games and activities are used to develop

- visual discrimination
- visual memory
- auditory discrimination
- auditory memory
- tactile discrimination
- motor coordination
- speech
- quantitative thinking

d. Instructional methods and techniques

Each child is carefully observed to aid in the selection of appropriate learning experiences.

Every effort made to help each child develop a positive and wholesome concept of his physical self.

Teachers exhibit attitudes of respect, recognition, and consideration of each child and provide experiences on the walking board and balance board.

Through the use of mirrors and pictures there is opportunity for child to develop an orientation of himself in "environmental" space.

Every aspect of preschool program takes into account what individual child needs in order to build up skills for a successful experience later in school.

Free play is important for child's development.

Directed conversation.

Relaxation experiences; games.

Story dramatization.

Finger plays, puppetry, felt board activities, film strips, movies, choral speaking periods, large and small muscle development games, science and mathematical concept activities, rhythmic exercise accompanied by music, singing of selected songs, recognition and discrimination activities involving objects, sounds, color, etc. (using oral language responses).

Activities included to encourage listening skill.

During all preschool activities, oral communication was emphasized; children encouraged to talk about whatever they are doing, seeing, hearing, and feeling.

e. Instructional materials

Standard nursery school materials (such as toys, sand, water, art materials, and musical instruments and records).

III. Delivery System

a. Organization of learning environment

Classes held four days per week and parent meeting on fifth day.

Daily program

morning	afternoon	Activity
8:30 - 9:45	12:30 - 1:45	1. Greeting and individual recognition of children as they arrive.

		2. Structured enrichment activities which allow for spontaneous behavior and wide choice of activity participation on part of individual children.
		Or, outdoor free play or games; indoor free play or games.
		Or, exploratory neighborhood trips; visits to other parts of school building.
9:45 - 10:00	1:45 - 2:00	Preparation for snack period
10:00 - 10:30	2:00 - 2:30	Snack time, including appropriate language experiences, relaxation experiences.
10:30 - 11:00	2:30 - 2:50	Language development period.
11:00 - 11:15	2:50 - 3:00	Story, poetry, or music time (encourages listening skill)
11:15 - 11:25	3:00 - 3:10	Home-going preparation
11:30	3:15	Dismissal

Project organization

Thirteen preschool centers (1966-67).

Technical advisory group of specialists set policies.

Central staff consisted of a project director, a language education specialist, a parent education specialist, a psychologist, and a social worker.

Staff at each center: teacher, an assistant teacher, a teacher's aide, a resource aide, a family aide, and a co-op clerk.

Regular staff workshop meetings held bi-monthly.

One center operated as an experimental variant of basic operational pattern.

This center served four classes of 20 children each for three days per week.

Each class was staffed by a teacher and assisted by 3 or 4 college-trained volunteers who were recruited from Detroit community.

Experimental center offered about 95 days of class time to 80 pupils (as opposed to 160 days to 40 pupils in other centers

Classroom teacher taught 3 days per week and had one day for planning; in addition, there was an additional teacher designated as Head Teacher who worked 3 days per week -- his responsibility was to coordinate training of volunteers and staff, be responsible for reports, and conduct parent program.

Volunteer program was directed by a volunteer supervisor who recruited volunteers, organized their hours, arranged for substitutes for volunteers, and served as a clearinghouse for volunteers' problems.

Parent program had a monthly large-group parent meeting with a variety of small group and individual activities held at other times during the month.

First three weeks of school year were used for recruitment of children and training of volunteers.

Parent program

Parents went on trips and attended weekly meetings at the preschool center to hear resource persons present information on health, child development, nutrition, child rearing, cooking, and crafts.

Discussion was encouraged.

Once-a-week home visits to parents were part of program.

Community excursions highlighting services and activities of community.

b. Pre-service and in-service procedures and materials

In-service education

58 in-service educational workshops for project staffs were held (during second year).

Designed to provide specific information for teachers, for preschool aides in language instruction, for family aides, and for co-op clerks.

Workshops had varied forms of presentation and organization.

Concerns of Workshops

1. Early child development or child rearing practices, including discipline and child behavior.

2. Development or enhancement of the skills and competencies of the staff--featuring demonstrations or art, workbench, cooking experiences, dance and rhythms, rhythm instruments and autoharp, and training sessions for co-op clerks.

3. Communicating information regarding the recruitment for the preschool program, hot lunch program, and definition of the roles and duties of personnel in the preschool.

4. Imparting new ideas, latest research findings, and progress of popular experimental programs.

5. Promoting the understanding of group dynamics and team teaching.

6. Exchanging ideas, promoting fellowship and dedication to the program.

The project director and his central staff worked closely to rearrange groups and settings to maximize both the learning that took place at the workshops and the efficiency of the workshop operation. Several adjustments were made during the operation of the program such as

1. Designating Wednesdays as workshop days with east and

west side groups alternating weeks, so that groups could be combined when a speaker was available for only one day.

2. Alternating the structure of workshop presentation to prevent fatigue.
3. Arranging for small grouping when necessary for effective workshop presentations.
4. Re-grouping of staff as needed when subjects of workshops were important.
5. Arranging for lunch service for staff persons attending workshops.
6. Scheduling workshops flexibly as to the interest of group and total time needed to develop an interest.
7. Utilizing and encouraging development of staff.

IV. Evaluation System

a. Evaluation instruments and procedures

Evaluation designed to accomplish two major aims.

1. To determine to what extent the project has been effective in bringing about the changes in the skill levels, social behaviors and attitudes of children and their parents. (Product evaluation)
2. To identify strengths and weaknesses in the project operations so that changes may be made to increase the project's effectiveness. (Process evaluation)

Design

One-group design using data on project group to compare observed performance with expected performance based on data from past years in the project school.

Sample

Out of 400 children, samples of about 40 to 80 were chosen for pre- and post-tests.

Procedures

Evaluations of preschool experiences provided children and of in-service training program were based on responses of preschool staff personnel to a questionnaire; and, on an experimental test battery which was developed and administered to a sample of children.

Pilot study baseline data were collected on all phases of the project through use of teacher reports on parent meetings, records of medical services provided to children, and results of tests administered to children.

A language program pilot study was conducted in eight of centers. A pre-post design was used.

Content analyses were made of reports by teachers, staff, members, and evaluator's reports and information categorized and tabulated. Raw score gains on tests administered to a pilot study group were computed for comparison with gains of pupils now in project.

In evaluating the effectiveness of the Preschool program in fostering language development, two groups of children (33-59 months of age) were pre- and post-tested on the PPVT; one group was post-tested after a period of six months and other post-tested after twelve months.

Parent education program evaluated by using a questionnaire.

Instruments

Baseline data

PPVT
Anecdotal records by teachers
Sequin Form Board Test
Stanford-Binet Response to Pictures

Pre- and post-tests

PPVT

b. Research and technical support data

Summary of evaluation findings

(Spring, 1966-67)

1. Differences in mean gains in vocabulary made by preschool pupils on test-retest for both 6 and 12 month periods exceeded baseline mean gains and norms means gains. These gains were all significant.

2. Means of gains in vocabulary made by preschool pupils in an experimental pilot language study were in almost all cases, greater after eight weeks than would be expected from 6 or 12 months attendance in the regular preschool. (Depth study planned for 1967-68 school year.)

3. Of the total sample in the 12-month test-retest, boys' overall vocabulary gains exceeded the gain reported for total Detroit sample by +2.5. The boys in the 33-41 months age group were superior to the means reported for the entire sample by 13.5. These gains are significant.

   The total sample of boys also exceeded the norms means gain by 4.9. Boys in the 33-41 months age group were superior to the reported norms of this age group by 13.4.

4. Generally, the language mean gains reported for boys were greater than those reported for girls in the 12-month test-retest period.

   The analysis of data obtained from a preschool sample attending the Detroit Preschool Program for a period of 6 months indicate that girls achieve mean raw score difference on a vocabulary test equal to that reported for the total sample, 8.9. Boys' means score gains differ by -.1.

5. An analysis of parent education activities indicated a varied program was offered to parents. 57% of the membership in the first year and 50% in the second year were participants of the program.

6. Parents are interested in learning more about the curriculum activities of the Detroit Preschool. This is their expressed first choice of an activity for planning for parent meetings.

7. Teachers report favorable changes in behavior and attitudes of both parents and children enrolled in the program.

8. A wide variety of in-service workshops was sponsored for both teachers and assistant teachers. The evaluative data from a sample of workshops held indicate that these workshops were highly rated as a valuable experience by majority.

Recommendations based on findings

1. The evidence concerning gains in vocabulary made by the preschool sample supports the recommendation that this program be continued with emphasis on the multisensory approach to curriculum and language functioning.

2. Based on the strength of evidence from a pilot language study, the DPCPEP should support an indepth study which will examine the variations in the special language classes as they are now organized to aid in developing the best mode of presentation for these classes. (The pilot data show that it was possible for some centers to produce mean gains from 13.0 to 21.8 after only ten weeks in these groups.)

3. The DP should continue sponsoring in-service workshops. Opportunities should be provided to utilize the talent and capabilities of persons with special training from the staff of the project.

4. The central staff should continue their efforts to assist teachers in planning for parent education meetings which are more evenly implemented. Some effort at quality control should be exercised to afford the presentation of a

wide variety of parent activities and topics close to their interests.

Parents indicated a preference for parent education meetings during which they can learn about the preschool curriculum and children's activities in the program.

5. There is a need for more supervisory persons to assist teachers with curriculum and concerns pertinent to implementation of program.

V. References

O'Piela, J. Evaluation of the Preschool Child and Parent Education Project as expanded through the use of Elementary and Secondary Education Act, Title 1, Funds. February, 1968. Educational Resources Information Center, Document Number ED 021 621.

Program Title: Language Retardation Unit of
the Communication Skills Centers Project
(1966-1967)

Principal Investigators or Developers:

Research and Development Department
Detroit Public Schools

Address: Detroit Public Schools
Detroit, Michigan

Source:

Evaluation of the Language Retardation Unit of the Communication Skills Center Project. Detroit Public Schools: Research and Development Department, Program Evaluation Section, January, 1968.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

This Project, first funded under the Elementary and Secondary Education Act, Title I, in 1966, is designed as a pilot project for the treatment of children with severe language handicaps.

The Language Retardation Unit is an exploratory effort to determine the benefits to be gained from exposing preschool language-retarded children to a daily program of intensive language therapy.

Basic purpose: to help the children learn to communicate well enough to give them a good chance for success in the regular school program or in appropriate special education classes.

Subsidiary objective: to develop new insights into the nature, causes, and treatment of language disorders in preschool children.

The Project is developmental in nature in that it seeks to further growth in language ability interrupted by physical and emotional irregularities occuring early in life.

b. Data oriented rationale

No data available.

c. Developmental theory

No data available.

d. Instructional theory

Important feature of the Project was the active participation of the parents of the children enrolled. Parents were required to take their children to the hospital for their physical and psychological examinations and to attend regularly scheduled meetings with the teachers.

II. Instructional System

a. Performance objectives

Evidence of improvement (any amount) in ability to communicate through spoken language.

Because the lack of ability to communicate was almost always accompanied by other deviations from normal behavior (such as, lack of motor control, extreme withdrawal, inability to follow directions and perform simple tasks, hyperactivity and lack of emotional control), it was hoped some improvement in social adjustment would result.

Thus, the goals in terms of performance were quite broad. Any improvements were to be considered indications of the value of the Language Retardation Unit.

b. Instructional organization

No data available.

c. Instructional content

Physical Examinations: During the first two months of the program each child was given thorough pediatric, neurological, audiometric, psychological and psychiatric examinations. Optimetric examinations were given to all enrollees.

The results of these examinations provided a comprehensive diagnosis of each child's problems and guided the development of a program of therapy to meet his individual needs.

I. Coordination Training:

A. Gross Motor Activities

Activities include visual-motor; language responses are elicited whenever possible; comprehension is constantly checked and trained through all activities.

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B. Fine Motor Activities

Closely related to visual-motor training.

II. Perception Training

A. Visual-Motor

Helps develop discrimination of color, size, and shape.

B. Figure-Ground

C. Perceptual Constancy

D. Position in Space

E. Spatial Relations

F. Sensory Discrimination

G. Memory

1. Visual

2. Auditory

III. Language Training

A. Receptive Training

B. Expressive

C. Speech Training

d. Instructional methods and techniques

Teachers used a variety of teaching techniques specifically geared toward language development and another group of techniques designed to meet children's needs for non-verbal training.

Specific activities were laid out in the program, but their selection doesn't appear discriminatory in any way; choice appears to be based on whatever materials and activities might promote growth in coordination, perception, and language ability.

Obstacle courses were used to develop coordination.

Figure-ground perception was improved by asking child to select objects or parts of pictures, etc.

Children were helped to transfer from an object to a picture to develop perceptual constancy.

Body image training aimed at developing the concept of position in space.

Memory ability was improved through the use of picture identification, reproducing geometric shapes, sequencing work, discrimination activities, following verbal directions, etc.

Language ability was developed by methods such as the following: describing pictures; following directions of all kinds; identifying objects; tracing body on paper; classifying foods, clothing, etc.; constantly requiring verbal responses; using telephone (imitation); tongue exercises; sound drills; blowing exercises; etc.

e. Instructional materials

A few of the materials used were teacher-prepared but the majority were ready-made and sold commercially.

They were chosen on the basis of the contributions to the development of coordination, perception, and language ability.

The materials used were an integral part of the project.

Individual differences among the children required varying combinations of techniques, methods, and materials.

Coordination was developed through the use of an obstacle course including the following: tunnel to creep through; step-over bar; geometric forms to walk on; balance bean; tether ball; punching bag; tricycle; fire fly; Rocky Boat.

Perception was developed through the use of materials such as chalkboards, Play Doh and clay, Busy Box with moveable parts making noises and requiring opening and closing, blocks of varying sizes, color cone, fitting board, postal station, peg board, hammer and peg pounding set, Lotto game, Looney Links, snap blocks, mosaic nesting blocks, lacing boot, Kitty in the Keg, puzzles, button and snap boards, stringing beads, scissors and paste, paints, crayons, templates, nut and bolt, graduated inlays, sorting activities, Frostig kit, Flannel Face, finger paint, rhythm band instruments, Magnetic Alphabet Board.

III. Delivery System

a. Organization of the learning environment

The Speech and Hearing Clinic (Detroit Public Schools) selected for participation in the unit ten preschool children who had previously been referred to the clinic because of their severe retardation in speech and language development, (February, 1966).

Children attended daily language therapy sessions in two classrooms (Cambell Annex School), (beginning March 14).

Each child was assigned to one of two groups of five children each, with one group attending for two and one-half hours in the morning, and the other for two and one-half hours in the afternoon.

(Later, the teaching staff was enlarged to four speech therapists working with twenty-one children.)

Children were taught individually or in groups of two to five children.

The periods of intensive instruction were brief and separated by other kinds of activity, such as language oriented play therapy.

b. Pre-service and in-service training procedures and materials

Teaching staff was composed of speech therapists.

IV. Evaluation System

a. Evaluation instruments and procedures

The Language Retardation Unit is an exploratory effort to determine the benefits of language therapy for preschool language-retarded children, begun in 1966.

Evaluation of the Unit was accomplished through an investigation of the progress made by ten pupils during the school year 1966-67, and twelve new entrants who were severely retarded in speech development.

The progress of the ten original entrants has followed up and reported as of December, 1967. The staff of the Language Retardation Unit provided the data for use by the Research and Development Department of the Detroit Public Schools.

Teachers were asked to rate pupils on the basis of good, fair, or poor. The lack of actual measures of performance preclude any reporting of changes in behaviors which were "good" in September and "good" in June. The lack of standards and precision of measurement made it impossible to judge the degree of change indicated by the ratings. "Good" may indicate acceptable performance in comparison with the abilities of the handicapped child, or it may indicate acceptable performance as compared to that of a child without handicaps such as the project children had.

b. Research and technical support data

Teachers in the Project have reported gross progress of each child in coordination, perception, sensory discrimination, memory, language, socialization, and behavior characteristics.

In December of 1967, of the ten original enrollees, three were attending both regular school classes and the Language Retardation Unit. Four others were still in the unit; one was placed in a Special Education Class. Two were placed in day care centers.

Modest funding of the Project prevented continuous psychological appraisal of the pupils' progress.

However, there was systematic appraisal in the form of subjective pre- and post-treatment judgements made by the speech therapists in charge of the units. Although these judgements may be lacking in scientific precision, they are valid indices based on the experience and training of specialists in a relatively unexplored area of public eduction.

Teachers were asked to rate each child's development in various aspects of performance related to coordination, perception, language, socialization, and other behavioral characteristics.

Comparison of pre- and post-judgements of teachers shows that all the pupils improved in from five to fourteen of the performances rated.

The only trait which showed poorer performance was that of overt aggressiveness. This reported deterioration might possibly be considered by a psychologist as evidence of improvement.

The greatest improvements reported were in the areas of sensory discrimination, ability to follow directions, and socialization.

V. References

Evaluation of the Language Retardation Unit of the Communication Skills Center Project. Detroit Public Schools: Research and Development Department, Program Evaluation Section, January, 1968.

Program Title: Preschool Program
"It Works"
1964-68

Address: Fresno, California

Source:

Preschool Program, Fresno, California: One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 977.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Directed toward three- to five-year-old Mexican-American, Spanish-speaking children primarily.

They were identified as disadvantaged--two-thirds were from families receiving welfare, and rest evidenced great need and English language deprivation.

Program lasts for one year.

Attempted to compensate for a language deficit which hindered later academic performance.

Emphasis on verbal communication and vocabulary development.

Instruction scheduled for three hours per day, five days a week (each week).

b. Data oriented rationale

No data available.

c. Developmental theory

No data available.

d. Instructional theory

Small-group instruction conducive to verbal language development.

II. Instructional System

a. Performance objectives

Improved vocabulary proficiency as measured by PPVT.

b. Instructional organization

Instruction organized around providing children with opportunities for verbal expression.

Activities were designed for four main purposes:

1. To develop a functional English vocabulary by presenting new words in the context of the students' activities.
2. To encourage the child to vocalize freely in English.
3. To introduce the child to standard sentence structure through example.
4. To stress listening and speaking skills.
5. To emphasize articulation by example rather than correction.

c. Instructional content

Language instruction was focus of program.

Competency developed through experiences in language, music, arts and crafts, sciences, health and safety, games and educational toys.

d. Instructional methods and techniques

Use was made of small discussion--and--activity groups including not more than five children to one adult.

Allowed children to verbalize naturally and frequently in a conversation.

Activities included finger plays, use of telephone, singing, rhythmic and interpretative physical reactions, fingerpainting, working with clay, observing living things, experimenting with magnets, rest periods, understanding nutrition and cleanliness, playing with puzzles and tinkertoys.

Outdoors activities included walks and bus trips.

Classification games.

Reciting poems.

Teachers used a list of "English Sounds for Which There is No Equivalent in Spanish," along with a list of 58 finger plays appropriate for each sound.

Parent program

Constant communication was maintained with parents not in school building.

Parent meetings were held whenever teacher or parents desired; however, meetings held at least twice per month.

Topics at meetings were always very relevant to needs of children and parents.

Parents' advisory committee met once a month; made recommendations to program staff.

Parents often went on bus trips prior to children's trips; later, parents and children went together; followed up with families taking trips individually.

Special trips designed just for parents also.

e. Instructional materials

Standard preschool materials used.

Not specially designed.

It was the way in which they were used that was significant.

III. Delivery System

a. Organization of the learning environment

15 children per class.

Aides allowed a ratio of five children to one teacher.

The outdoors was used frequently as a classroom.

Classes were conducted in 27 portable classrooms set up at 19 elementary school sites.

Two classes per day met in each room, one from 8:30 to 11:30 and the other from 12:30 to 3:30.

Each teacher and aide worked with one class only.

Parent involvement was important component of program; allowed to play a full instructional role with the discussion-activity groups--more than just a "helper."

Also performed many tasks involving material preparation.

b. Pre-service and in-service training procedures and materials

Planning sessions were held with the parents prior to beginning of school year.

Monthly staff meetings held; often conducted by outside experts; a monthly staff bulletin was issued, with contributions from teachers, notices of meetings, trips and other news.

In 1967-68, 29 in-service and/or organizational meetings were held for teachers and aides.

To make communication easier, four small daytime meetings were often held on one topic (rather than one large evening meeting).

IV. Evaluation System

a. Evaluation instruments and procedures

Instruments: PPVT

Design: Pretest-post-test.

Sample: (1964-65)--45 students.
Grew each year.
By (1967-68)--750 students in 50 classes in 19 school sites.

b. Research and technical support data

1964-65

On PPVT, nearly every child raised his IQ by 10 to 20 points.

1965-66 (shorter program year)

Negligible gains reported.

1966-67

A bivariate analysis of 428 pupils who took both tests was done.

Three ethnic groups (Caucasian, Mexican-American, and Negro) were treated separately to determine whether there was a difference between ethnic groups as they entered preschools and whether there was a difference between groups as to benefits from the program.

An analysis of variance was made of the pretest means of the three groups and also of post-test means.

A "t" test of significance of difference between correlated means was computed for each group to test significance of each group's gain.

1967-68

A "t" test to determine the significance of gain was computed for each class and for each ethnic group.

An analysis of variance was computed to determine whether the groups differed from one another on the pretest and/or post-test.

Of 47 classes considered, 38 gained significantly in intelligence as measured by the PPVT.

Also, each group (ethnic) gained significantly.

Analysis of variance revealed significant differences between ethnic groups on both pretests and post-tests.

Summary

As evidenced by the PPVT, this program was successful in increasing the intelligence of preschool children.

Longitudinal benefits have yet to be investigated.

Other Evaluation Indices

In 1966-67, opinionnaires administered to teachers and social case workers concerning the program and its effects upon children and parents.

Ratings were quite positive.

Parents' advisory committee recommended extension of program to more children.

An increased sense of community was noted.

Parents became interested in furthering their own education.

Many parents became more involved in schools' PTA activities.

"Articulation Pilot Program"
1966-67

Felt that greater articulation was needed between preschool and kindergarten.

Special program was started at one of school sites in 1966.

In this program, mothers of kindergarten children continued to assist in classroom instruction, as they had done in previous year, and preschool staff explained the methods and philosophy of the preschool to the kindergarten teachers.

V. References

Preschool Program, Fresno, California: One of a series of successful compensatory education programs; It Works: Preschool Program in Compensatory Education. 1969. Educational Resources Information Center, Document Number ED 027 977.

Program Title: An Evaluation of the Effects of a
Summer Head Start Program
June 1967

Principal Investigators or Developers:

Sherwood B. Chorost
Kenneth M. Goldstein
Richard M. Silberstein

Address: Wakoff Research Center
657 Castleton Avenue
Staten Island, New York 10301

Sources:

Chorost, S., Goldstein, K., & Silberstein, R. An evaluation of the effects of a summer Head Start program. June, 1967. Educational Resources Information Center, Document Number ED 014 327.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

Program is aimed at preschool, disadvantaged children. The Summer Head Start program is one special aspect of the overall plan.

The particular summer program being evaluated here ran from July 5, 1965 to August 31, 1965, approximately two months.

It has very broad goals which preclude specific itemization. The program is directed towards changing the actual life styles and school adjustment patterns of disadvantaged children. In a very vague way, it attempts to fill the gaps in the child's cognitive and social development, and thus is involved with all major content areas, particularly language, and with the creation of positive mental attitudes toward himself, school, and society in general.

b. Data oriented rationale

No specific data are used to form the basis of Summer Head Start. The necessity of a preschool program for disadvantaged children is concluded from the finding that at least twenty percent of the population of this country is living in substandard economic and educational conditions.

There is simply a recognition that ignorance, failure, and alienation from society are transmitted from generation to generation, and that early education may possibly intervene to break the cycle.

Public schools are believed to not be able to prepare these children to be productive and self-fulfilled.

c. Developmental theory

No specific developmental theory used.

There is an assumption that the characteristics of children from poverty can be identified for all areas of the United States. Attempts are made to specify in what areas they are lacking, but no theory as to the process by which these deficits can be made up or as to the way poverty children learn is employed as a foundation for the Head Start program.

d. Instructional theory

Varies widely according to teaching staff, directors, facilities, funds, etc.

II. Instructional System

a. Performance objectives

To develop the cognitive and social skills of underprivileged preschool children necessary for success in the regular public school program.

To especially improve language skills which appear instrumental in learning achievement.

To equip children with skills that will enable them to adjust to first grade (specifically) and hopefully to school later on.

b. Instructional organization

No data available.

c. Instructional content

No data available.

d. Instructional methods and techniques

No data available.

e. Instructional materials

No data available.

III. Delivery System

a. Organization of learning environment

No data available.

b. Pre-service and in-service procedures and materials

No data available.

IV. Evaluation System

a. Evaluation instruments and procedures

Sample consisted of sixty-one children enrolled into the Staten Island Mental Health Society Summer Head Start program (July 5, 1965 to August 31, 1965).

Children selected upon identification of specific problem families and problem areas by the guidance staff of the school serving a high density poverty area on Staten Island. Enrollment into program based on

1. low family income
2. residence in poor housing facilities
3. information about family disruption

All screening data were gathered by trained representatives of SIMHS in door-to-door interviews.

Of the sixty-one children, thirty-three were boys and twenty-eight girls; (thirty-six were Negro, twenty-five were Caucasian or Puerto Rican).

Average age: four years eleven months
Age range: four years one month to six years two months

Average number of children in each family: 3.7
Range: 1 to 10

Design

Study consisted of four phases

Phase I	July 5, 1965 through August 31, 1965 (period of Summer Head Start program).
Phase II	Child's adjustment during third month of formal public school.
Phase III	Report card data at the end of one year of formal public school.
Phase IV	Performance measures and ratings taken during the first six months of child's second year of school (first grade).

Phase I

Measuring instruments employed

A. Child Performance Measures

1. Cognitive (intellectual functioning) skills in verbal and nonverbal areas.

   a. Ammons Full Scale Picture Vocabulary Test, measuring word recognition and yielding a mental age score.

   b. The Goodenough scoring of the Draw-a-Person Test, measuring nonverbal intellectual level and yielding a mental age score.

2. Perceptual-motor functioning skills

   a. Bender-Gestalt Test of Visual-Motor Performance, measuring eye-hand coordination and level of perceptual skill which was scored to yield a perceptual age score.

3. School-specific readiness skills

   a. Metropolitan Readiness Test, yielding scores reflecting the number of correct responses in rudimentary reading and number skills.

   b. The O. E. O. developed Preschool Inventory (based on research by Bettye Caldwell), yielded scores on personal orientation, body image, number concepts, general information, visual discrimination and association, relationships, following directions, and comprehension of social roles.

B. Ratings of Child Adjustment

1. Operation Head Start Behavior Inventory, fifty item rating scale describing child's behavior.

2. Classroom Observation Rating Scales, ten item rating scale consisting of cooperation with adults, peer relationships, aggressive reactions, ability to postpone gratification, independence, restraint of motor activity, type of motor activity, activity versus passivity of speech, verbal skills, and quality of speech.

C. Maternal Attitudes

1. Attitudes toward education, sixty-four items judged relevant for measurement.

Phase II

A. Child Performance Measures (none during this phase)

B. Ratings of Child Adjustment

1. Assessment of language skills of three- to six-year-old children. Inventory of oral commination for children in the More Effective Schools Programs (children in study attending an MES school). Expressive ability rated in four areas: language structure, speech production, naming, and linguistic skills; receptive language/ability measured in two areas: auditory discrimination and listening comprehension.

Phase III

A. Child Performance Measures (inferred from report card grades)

B. Ratings of Child Adjustment

1. Final report card grades (June, 1966).

Phase IV

A. Child Performance Measures

1. New York State Readiness Examination, standard reading achievement scale yielding percentiles for first grade.

2. Gates-McKillop Primary Reading Test, yields a grade placement score.

B. Ratings of Child Adjustment

1. Mid-Year Report Card Grades, (January, 1967).

b. Research and technical support data

Phase I

A. Initial and final child performance measures

Children showed significant improvement on all sixteen of the performance measures by the end of the two-month program. The average gain in mental age was almost thirteen months on the Ammons Full Scale Picture Vocabulary Test and six months on the Goodenough Draw-A-Person test. This suggests significant gains in language intelligence, verbal and nonverbal.

On the Bender-Gestalt reproductions there was an increase in perceptual age of about two months. This indicates a gain in visual-motor ability which is consistent with what would be expected during a two-month program. Thus, while the growth is statistically significant, it cannot be meaninfully related to program instruction.

Significant gains recorded on the four reading subtests of the Metropolitan Readiness Test, suggesting better readiness skills for the group.

Significant gains recorded on the numbers subtest of the Metropolitan, suggesting an increase in the level of readiness from July to August.

Significant improvement was observed in each of the eight cognitive areas tested by the O. E. O. developed Preschool Inventory. These results are consistent with the findings reported for the Metropolitan Readiness Test.

Thus, on the basis of tested readiness skills, children were better prepared for school at the conclusion of the Head Start program as indicated by their greater command and utilization of a wide range of concepts.

B. Initial and final ratings of child adjustment

Because the Operation Head Start Behavior Inventory and the classroom observation rating scales were newly developed, each was studied further to determine its structure and meaninfulness.

Subjecting the Behavior Inventory a centroid factor analysis and rotating to varimax criterion, four significant factors emerged.

Factor 1 was characterized by items which reflected ability to explore, welcome novelty, show imaginativeness and creativity, and to trust one's own ability (at one end) and timidity, lack of assurance, constriction, and inhibition (at the other).

Factor 2 represented tendencies toward being sympathetic, considerate, even tempered, and compliant toward adults (at one end), and disrespectful for the rights of others, aggressive in response to frustration, quarrelsome, and emotionally overresponsive to usual class problems (at the other).

Factor 3 represented an eagerness to talk and socialize with adults, and curiosity as reflected in asking many questions for information (at one end), and reluctance to talk to adults, speaking only when urged, and generally keeping aloof from adults (at the other).

Factor 4 represented ability to sustain activity without need for adult attention or approval, generally carefree behavior, lack of apprehensiveness, and desirability as a playmate (at one end), and tendencies for getting unduly upset by mistakes or own poor performance, easy distractibility, and irritability over interruptions (at the other).

The Classroom Observation Rating Scales were subjected to a principal axis factor analysis and rotation to varimax criterion.

Two significant factors emerged.

Factor 1 included cooperation with adults, aggressive reactions, ability to postpone gratification, restraint of motor activity, and type of (fine versus gross muscle) muscle activity. Called general adaptive.

Factor 2 included activity versus passivity of speech, verbal skills, and quality of speech. Called language skills.

Results of the Behavior Inventory.

The forty-five children included in this phase of the study showed significant improvement on Factor 1 (novelty-seeking/constriction), Factor 2 (cooperative/quarrelsome), and Factor 4 (irritability/stability).

Results of the classroom observation rating scale.

Significant gains were indicated for the Head Start children. There was improvement in Factor 1 (general adaption), and Factor 2 (language skills).

Greatest gains were reflected in the language skills factor, where improvement was evidenced in verbal skills, activity versus passivity of speech, and quality of speech.

C. Maternal attitudes toward education and their relationship to Head Start performance.

Principal axis factor analysis yielded four statistically significant factors, accounting for seventy-eight per cent of the total variance.

With regard to the relationship between maternal attitudes and the children's Head Start performance, findings indicated a possible relationship between final achievement performance and the first attitude factor.

It was anticipated that the best Head Start performance levels would occur where the mother was supportive of the school and held good school performance in high esteem, and where her attitudes were similar to those of middle-class parents (and teachers).

However, the directions of the correlations indicated that children who did well at the end of the program had parents who were somewhat critical of the school system, in that they felt they held higher standards than did the schools.

Since the overall number of statistically significant correlations was low and might be attributable to chance differences, these correlations are merely suggestive of hypotheses for future testing.

Mothers responded in a generally positive, socially desirable direction similar to those responses expected of middle-class parents.

As a group, the Head Start mothers reported having gotten along well with their teachers when they went to school.

They reported having gotten as much education as they would have liked, and indicated that education is more important today than when they attended school.

They felt education is important for getting ahead, and things one learns in school will be useful in later life.

They felt schools could pay more attention to low-socioeconomic status children, and indicated sex, race, religion, and socioeconomic status are of little importance in determining child's chances for success.

Mothers felt teachers should start taking child's ability into consideration at early age.

They felt that children vary in their performance, and teachers, under proper guidance, should be free to teach what they wish.

They felt that while learning to solve problems is important so are the learning of proper attitudes, socialization, morality, and emotional-social development.

Mothers felt schools are crowded, doing a good job, and paying attention to both slow and bright children.

They believed teachers are interested in their children and are doing as good a job in their neighborhood as in others.

They viewed children as being somewhat lazy and unmotivated and thus need supervision and discipline rather than freedom; teachers should be more strict and have more authority.

Mothers interested in having their children do well; wanted good grades and college educations for their children.

They felt children should attend school regularly, that homework is good for them, that they should help their children with homework.

They felt their children have good chance of succeeding in school and had been as well prepared for school as the next child.

Phase II

Of the sixty-one children enrolled in the Summer Head Start program, twenty-two entered kindergarten and five entered the first grade; the remaining thirty-four children were either too young for school enrollement or moved out of the area of study.

One hundred twenty-seven, or all, of the children enrolled in the same classes as the Head Start graduates served as control subjects.

Assessment of Language Skills

Results indicated that the Head Start sample and the non-Head Start group had essentially the same characteristics, except for age and school grade. Because a significantly larger proportion of the Head Start children who were entering the public school were going into kindergarten, the mean age and grade level were lower; since the Assessment of Language Skills scale is associated with chronological maturity, was expected Head Start children, being younger, would have poorer scores on teacher ratings in this area.

Significant differences between the two groups were obtained in areas of Speech Production (speaks audibly, pronounces familiar words correctly, enunciates correctly). Naming, uses names of very familiar objects, of familiar teachers, uses personal pronouns when referring to himself. Auditory Discrimination, correctly identifies sound effects without looking repeats a single rhythmic pattern. Language Structure, does not use baby talk or make up words, uses complete sentences. And, Listening Comprehension, follows directions.

Phase III

Ratings of Child Adjustment and Performance

In order to control for the disparity in age and grade level, follow-up data at the conclusion of one year of schooling were obtained only on children who had entered kindergarten in September, 1965.

Although twenty-two of the twenty-seven Head Start graduates had entered kindergarten, by June, 1966, only sixteen (seventy-two per cent) were completing kindergarten at the cooperating public school.

Of the original sixty-one Summer Head Start children, twenty-seven entered the cooperating school; of the twenty-two (thirty-six per cent) who had entered kindergarten, only sixteen (twenty-six per cent) of the original sample were in attendance at the end of the year.

Determination of socioeconomic status of the families of all the children in kindergarten:

Low SES membership: family on welfare/unemployed; manual labor/unskilled job/domestic; below sixth grade education for parents; severe physical crowding in home; residence in in a poverty district; limited educational experiences for children at home.

Middle SES membership: steady employment; white collar/ skilled or semi-skilled employment; at least high school education for parents; adequate room in home; residence in other than a poverty district; adequate educational experiences for children at home.

Results

Low SES: six children
Middle SES: ten children

Head Start graduates were compared with those kindergarten classmates who were most similar to them in age, sex, race, language at home, and size of family.

Result

A control group of thirty children, nine of whom were judged from lower-class environments, twenty-one from middle-class environments. No significant differences among groups in terms of sex, race, age, or number of children in family.

Test employed

Two by two analyses of variance to test for differences in four kindergarten final report card grades and in total absences for the year.

Results

Head Start graduates were rated lower in social behavior than non-Head Start graduates.

Children judged to be from lower-class backgrounds, irrespective of preschool experience, were rated to be poorer in oral expression than those of middle-class backgrounds.

Was a significant interaction for absences: within the lower-class sample only, children with Head Start experience attended school more frequently than those without Head Start experience; no such difference for children judged to be of middle-class background.

No significant differences among the groups in either work and study habits, or health education.

Phase IV

Child performance measures (same sample as used in Phase III).

Reflecting adjustment one and one-half years after Head Start experience.

Results of first grade performance

Analysis of variance

Children of lower-class background placed markedly poorer in percentile ratings than did children of middle-class background (seventeenth percentile, as compared with the thirty-ninth percentile).

No significant differences among groups of Gates Reading Test.

Ratings of Child Adjustment and Performance--Mid-Year Report Card Grades

In arithmetic, handwriting, social behavior, and work and study habits, children of lower-class background were graded significantly lower.

Significant interaction effect for social studies showed that Head Start experience was associated with higher grades for lower-class children, but with lower grades for middle-class children.

No significant differences among groups with regard to grades in oral expression.

Days absent: middle-class children had significantly better attendance than lower-class children; children with Head Start experience had better attendance through the first half of the first grade than did children who had not attended Head Start.

General Conclusions

Data indicated that during the course of the eight-week program, significant improvement was shown by Head Start children in almost every area explored (despite fact that selection was biased toward dealing with children from most severely disrupted families in area).

But, lack of a control group makes any clear interpretation of finding impossible.

Assuming improved scores were indicative of real improvement, there was a progression toward decreased constriction, increased cooperation and sociability, and decreased irritability.

Investigators believe that the initial performance of children was affected by their suspicion and distrust of their teachers and test administrators.

Was reflected behaviorally in their frequent unwillingness to verbalize, to concentrate, to sit still, and to relax; by

> end of summer, these tendencies were replaced by experimental reaching out, warming up, and development of sense of tentative trust.

Although Head Start graduates were younger (and probably more disadvantaged because of selection procedure), data indicated these children had better language skills than did non-Head Start group.

> Investigators believe it was improvement in emotional readiness which allowed Head Start children to perform better in this area, rather than an increase in the linguistic skills per se.

Appears that Head Start serves its major purpose of producing growth in emotional readiness (i. e., trust in the environment, confidence in self, and identification with goals of adults).

Appears that compensatory preschool programs for disadvantaged children should avoid being early cognitive training programs (academic skill training), until the emotional foundation has been provided for each child.

Follow-up of children's performance in kindergarten and first grade resulted in a dissipation of gains.

> Despite early absolute gains by lower-class children, these children diverge early in level of performance from that of middle-class children; this divergence between performance of lower-class and middle-class increases over time.
>
> Thus, to promote school success the educational process should start with an attack on manifestations of distrust, fear that one's energy output will result in failure, negativism, and apathy with regard to school tasks. This attack must be sustained over a sufficiently long period of time if success is to last.

Final Summary

Sixty-one children were enrolled in a Summer Head Start program.

Tests of cognitive, perceptual-motor, school readiness, behavioral adjustment revealed significant initial gains in all areas tested.

Teacher ratings of language skills indicated initial superiority of Head Start graduates when compared with their classmates.

Final kindergarten report card grades showed no advantage of Head Start children over their peers.

By middle of first grade, results indicated that, irrespective of Head Start experience, children of lower-class background were less successful in school subjects than middle-class children.

Only area where there was a continuing, positive effect was in greater frequency of attendance at school.

V. References

Chorost, S., Goldstein, K., & Silberstein, R. An evaluation of the effects of a summer Head Start program. June, 1967. Educational Resources Information Center, Document Number ED 014 327.

Program Title: Cultural Environmental
Achievement Project
(Summer, 1964)

Principal Investigators of Developers:

Bethlehem Public Schools

Address: Bethlehem, Pennsylvania

Source:

Cultural Environmental Achievement Project: A Summarization and Evaluation of an Experimental Preschool Program. July, 1964. Educational Resources Information Center, Document Number ED 021 610.

PROGRAM SUMMARY

I. Program Foundations

a. Prescriptive and assumptive conditions

A four-week preschool enrichment (three hours/day) program conducted in Bethlehem, Pennsylvania area (Summer, 1964).

Designed to counteract the educational deficiencies of culturally disadvantaged 4- and 5-year-old Negro, Puerto Rican, and Caucasian children.

115 participants in four schools.

Program designed to make up for experience-poor background, to stimulate and encourage in the home a more positive attitude toward school and learning, and to provide a new field experience pre-service education students which may encourage more of them to teach culturally deprived children.

b. Data oriented rationale

Children selected for program (who had been registered for kindergarten for the fall) on basis of their probable difficulties in school because of lack of familiarity with environment and cultural skills which many of their future schoolmates have.

Screening also included S-B, copying of designs test, and Goodenough's Draw-A-Man Test.

Diagnostic component

Program also based on on-going observations of each child in terms of following criteria

1. absorption
2. indications of feeling
3. relationship with other children

When observing creative activities, teacher was to note what the material means to the child, the emotional needs of the child, and the unique values of the specific medium for given children.

Each teacher kept an anecdotal record on each child in his group (entries were made at least once a week, preferably every day).

Each teacher also kept a diary of his experiences each day--his successes and failures, recommendations, what he learned, etc.

c. Developmental theory

No data available.

d. Instructional theory

Child-centered approach--Principles of program

1. Provide many opportunities for social adjustment.

2. Develop program from the immediate environment of the children.

3. Allow adequate time and opportunity for children to express themselves freely through many media.

4. Allow child to use his whole body and to develop wholesome attitudes towards it.

5. Utilize the experiences of children and also build for later experiences; include formal subject matter as readiness activities; teacher is alert for experiences to assist children in acquiring understanding of basic concepts.

6. Parents should be an important component of program.

II. Instructional System

a. Performance objectives

Objectives were to stimulate and encourage in the home a more positive attitude toward school and learning; to counteract results of experience-poor background so that children exhibit more readiness for kindergarten and first grade, and to encourage more education students to teach culturally deprived.

b. Instructional organization

Daily schedule followed a typical nursery school or kindergarten pattern.

Each week had a central focus of concept and understanding development, with a number of related experiences.

Themes used were (1)orientation to school; (2) a city park; (3)the farm; and (4)the airport.

Experiences in science and social amenities also included.

Emphasis on oral language development and simple arithmetic concepts.

Each day was also based on a specific theme.

c. Instructional content

Concepts taught

A. Social Living

1. Conversation skills
2. Group activities-- games
3. Small group conversation

B. Working Together

1. Dramatization
2. Construction

C. Health

1. Cleanliness
2. Nutrition
3. The body
    a. Parts
    b. Senses

D. Animals, Insects, Birds, and Fish

E. Safety

F. The Family

G. Counting

H. Colors

I. Rhythm

1. Fundamental movements
2. Imaginary play
3. Rhythm bands

J. Shapes

1. Round
2. Square
3. Triangle
4. Diamond
5. Size

K. Plants

L. Transportation

M. Water

1. How to use it
2. What we use it for
3. Floating

N. Nursery Rhymes

d. Instructional methods and techniques

Activities included those typical of nursery school: work with clay, finger paint, crayons, construction paper; games, songs, rhythm activities, and story telling.

Field trips to a park, farm, and airport.

Specific methods and techniques

A. Social Living

show and tell period
variety of popular nursery school games
T-C discussions (in small groups) about bulletin boards, families, etc.

B. Working Together

dramatizations of "The Three Pigs" and "The Three Bears"
construction of gingerbread men, airplanes, and paper hats

C. Health

cleanliness taught through filmstrips, teeth-cleaning games, cleaning "Dirty Doll," dramatization of getting up in morning and preparing for school
nutrition taught through pictures of three good meals, and food made out of play dough
body parts: songs; senses: exposure to a variety of sights, smells, tastes, textures, sounds

D. Animals, Insects, Birds, and Fish

discussion of animals brought into class and of farm animals; matching game: babies with parents; stories; pictures

E. Safety

lessons on obstacles; crossing the street: flannel board story

F. The Family

puppets: take roles as members of family; small dolls as members of family; finger play

G. Counting

putting artificial flowers in a garden and taking them out
flannel board apples and wax apples used
pictures of trains, each with different numbers of cars
taking turns
calendar activities

H. Colors

artificial lollipops: hold one if child could name color
fruit passed around after color given
"fishing pole" game: magnet at end of string, fish for colored fish in empty aquarium
talk about color of clothes children wearing

I. Rhythm

taught to skip, hop, jump, run, walk, sway, march, gallop
pantomined airplanes, ducks, trains

J. Shapes

taught through use of flannel boards, books, and other items in room

K. Plants

filmstrips; planted, watered, and watched seeds
experiment involving putting plants in four different environments and noting differences in growth

L. Transportation

imaginary trip to the jungle
filmstrips

M. Water

discussions on how to use it
experimenting with floating objects of different weights

N. Nursery Rhymes

taught through dramatizations, flannel boards, records, song and puzzles

e. Instructional materials

Materials used in program were typical of those found in most nurseries.

Included materials associated with

keeping house
building materials
sand
water toys
puzzles, peg pounders, etc.
animals and plants
books
musical instruments
art materials
outdoor play materials

Teaching materials included

flag
calendar
weather chart
helper's chart
flannel board
projector
records (phono)

A bibliography of suggested records, filmstrips, songs, and finger plays was compiled by program staff.

Also included is bibliography of valuable books available in most libraries (for teacher use).

III. Delivery System

a. Organization of learning environment

About 115 participated: six classrooms staffed by three master teachers and twenty-two student teachers (S-T).

Four schools were involved.

One master teacher for every two classrooms.

Twenty children in each classroom.

Three or four S-T responsible for five or six children.

Each teacher was responsible for one portion of day's work.

Twenty-eight Junior League volunteers assisted with interviews and materials, refreshments and meetings.

Room divided into activity areas

- doll corner
- block building area
- sand table
- water play area
- game and toy area
- science corner
- library corner

Daily schedule

8:45	Greet children
8:45 - 9:15	Free play
9:15 - 9:45	Art
9:45 - 10:00	Good morning time (pledge, calendar work, weather, songs)
10:00 - 10:45	Lavatory rest and snack
10:45 - 11:00	Language
11:00 - 11:15	Science (concep development)
11:15 - 11:35	Outdoor play
11:35 - 11:55	Story and finger plays

11:55	Preparation for dismissal
12:00	Dismissal

Parents' meetings

Held weekly in each school.

Topics included:

1. parental orientation to program
2. child behavior
3. child health
4. parental responsibility

Consultants used throughout program.

Interpreters included throughout program.

b. Pre-service and in-service procedures and materials

Prior to opening day, a week's orientation program was conducted for the twenty-two student teachers by coordinator of nearby college; several qualified educators participated.

In-service program consisted of weekly meetings under direction of coordinators and master teachers to discuss discipline, concept building, and particular problems of disadvantaged, etc.

A week of evaluation was conducted for S-T following four-week program.

IV. Evaluation System

a. Evaluation instruments and procedures

Sample

One hundred fifteen four- and five-year-old children selected on the basis of chronological age, SES of family, and willingness of parents to cooperate, and scores on the Goodenough Draw-A-Man Test, reproduction by the child of the circle, square, and diamond from the Binet scale. Children represented a cross-section of neighborhoods (Negroes, Puerto Ricans, and Caucasions).

Design

Ninety-seven were administered both pretest and retest.
Fourteen were in pretesting session only.
Twelve were in retesting session only.
(Variance in number of children tested before and after the four-week program was due to absence, late entry, and/or withdrawal from program. Admission of a few late entries, without psychological screening, was permitted because the family was already known to school personnel.)

Instruments

Copying Designs
Draw-A-Man Test
General observations of children, and reports of teachers

b. Research and technical support data

Results

For the ninety-seven children tested on both occasions, the following results were obtained.

Test	Number of Children Showing		
	Gain	No Change	Loss
Copying Designs	39	51	7
Draw-A-Man	61	17	19

On the basis of the Draw-A-Man test, a significantly high number of children showed an increased readiness for entrance into kindergarten. (Additional study and evaluation will be made as these children move through primary grades.)

Observation of children in classroom revealed that children

1. had learned to work together

2. had developed techniques for using art materials

3. had become aware of the rights of other children

4. had become less shy and fearful in the school situation

5. were more ready to accept responsibility in classroom housekeeping

6. had improved in their use of oral language and had acquired some knowledge of the common cultural heritage of nursery rhymes and fairy tales

7. had been exposed to many new experiences

Parent response

Positive; became totally involved; their role in the educative process became clearer to them.

Student teachers

Coordinators of the public schools considered the program to have been of great value in orientating a group of prospective teachers to the background and needs of culturally disadvantaged children, in developing their acceptance of these children, and in cultivating a willingness on their part to accept teaching positions in schools situated similarly to those used in the demonstration. S-T were unanimous in agreeing that this had been a valuable experience for them.

Recommendations for future

1. That the cooperating institutions and/or agencies make an earlier commitment to the program, preferably no later than February 1, to permit more extensive testing and finer screening procedures.

2. That a contact person be added to act as a go-between staff and parents.

3. That a school nurse be added.

4. That the orientation of S-T be concerned to a greater degree with the specific activities and materials to be used

in classroom; allow more preparation time for S-T.

5. That there be a master teacher assigned to each school unit.

6. That all professional personnel involved in program participate in orientation week and in week of evaluation.

7. That further study be made concerning the length of the preschool program; a longer period might yield even greater gains; however, coordination with the college schedule is vital.

V. References

Cultural Environmental Achievement Project: A summarization and evaluation of an experimental preschool program. July, 1964. Educational Resources Information Center, Document Number ED 021 610.